AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

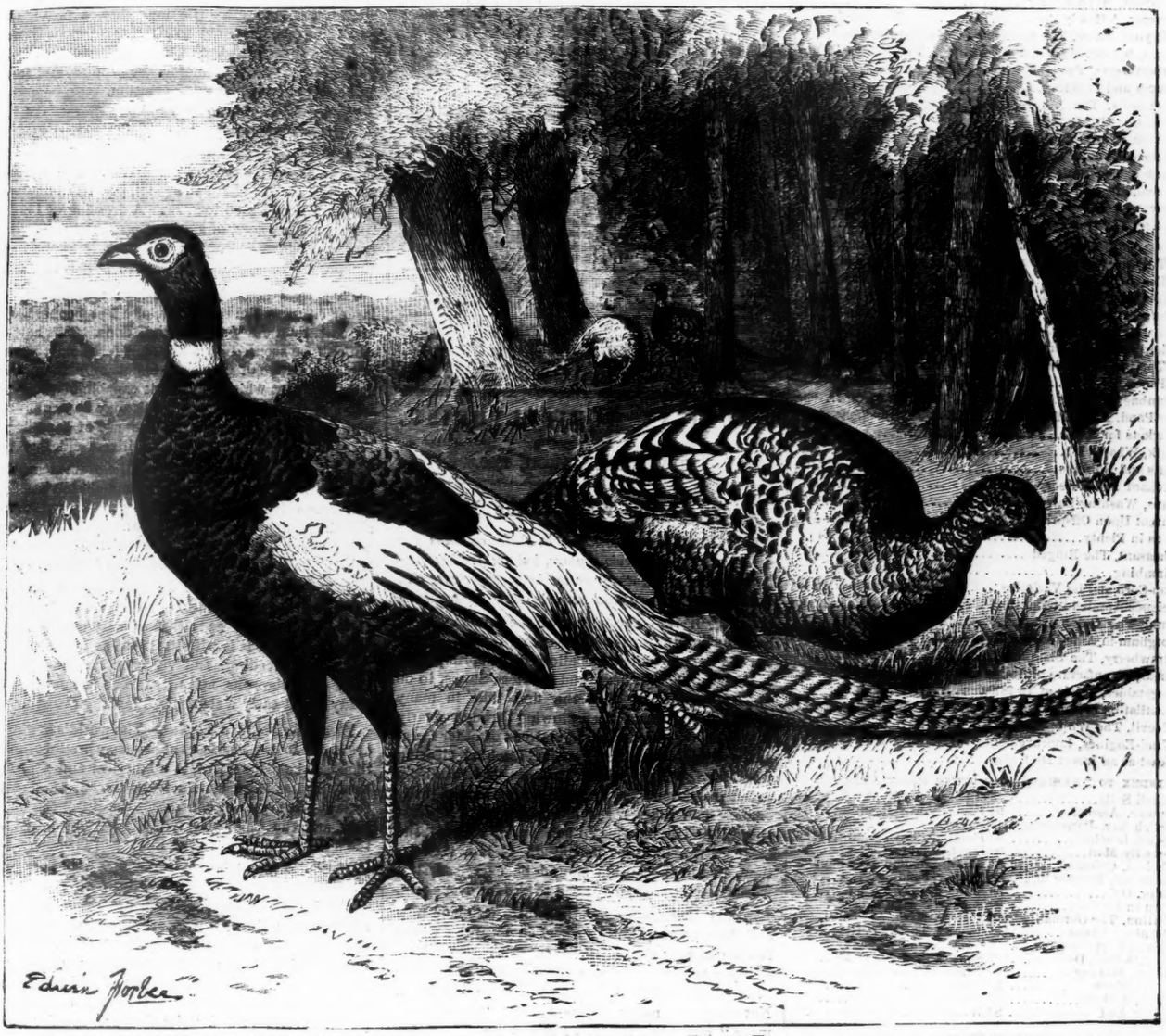
"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

ORANGE JUDD COMPANY, Publishers and Proprietors, 245 Broadway.

ESTABLISHED IN 1842.
German Edition issued at the same rates as in English.

TERMS: $1.50 per Annum in Advance, post-free; Four Copies $5.—Single Number, 15 Cents.

VOLUME XXXIX.—No. 3. NEW YORK, MARCH, 1880. NEW SERIES—No. 398.



THE RINGED PHEASANT (*Phasianus torquatos*).—DRAWN BY EDWIN FORBES.—*Engraved for the American Agriculturist.*

The strict preservation of game in England has its advantages, though a large share of the people think it a hardship. Still only in that, and other countries, where every one can not go about shooting everything that flies, is it possible to have such birds as are shown in the engraving—not only have them, but in great abundance. The Pheasant occupies a place midway between poultry and game. It can only be domesticated with considerable difficulty, and even when confined in an aviary, will destroy its beauty in its efforts to escape; yet it is kept in its present plenty by the aid of the poultry keeper, great numbers of pheasant's eggs being annually hatched by common hens, and the young, when large enough, allowed to run wild. Though we speak of the *English* Pheasant, the bird is not a native of England, but comes from the ancient Asiatic province of Colchis, now known as Caucasus, having been brought to England so long ago that the tradition is lost. Besides the common Pheasant, with its rich colors of brown, green, purple, and blue, there is the Ringed Pheasant from India and China, and chiefly distinguished from the other by a white ring that almost completely encircles the neck. This species is now almost as abundant in the English game preserves as the common one. Besides these two, there is the Bohemian Pheasant, of a silver-gray color throughout. These three species of Pheasant make up the immense flocks which stock the coverts on the large estates, and of which thousands are killed at the annual *battue*. We read accounts of the participation of royal personages and noblemen in pheasant shooting, and those who do not know, may think it very noble sport for these great people to be engaged in, while in reality they deserve no more credit than if they should go into a barn-yard and shoot at the chickens. Those who are to shoot are given favorable places, where they may sit if they please, while the game-keepers with dogs and much noise drive up the birds to be shot, and the slaughter goes on until the shooters—we can not regard them as sportsmen—are tired. Those who engage in such shooting, in which half-tame birds are knocked over, without a chance for their lives, apologize for its cruelty, by asserting that it is necessary for the good of the birds themselves. But for this, the natural increase would be so great that the birds would suffer by starvation, as the land would not naturally produce sufficient food for the immense numbers. Even now, large plantations of berry-bearing shrubs are made to support them. The Golden Pheasant of China is one of the most gorgeously-colored of birds, no description can give any idea of the richness of its plumage. It is said that the experiments made in the naturalization of this in England promise success.

COPYRIGHT, 1880, BY ORANGE JUDD COMPANY.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND CLASS MATTER.

Contents of this Number.

Among the Farmers, No. 50: Grease in Horses, Road Taxes, Farmers Marketing Produce, Drainage at Houghton Farm.....6 *Illustrations*.. 96-97
Animals, Our Domestic..... 101
Bee Notes for March.....2 *Illustrations*.. 90
BOYS' AND GIRLS' COLUMNS:—*The Doctor's Talks:* Centrifugal Force. A Whirling Puzzle. Our Puzzle-Box. Illustrated Rebus. This is Leap Year—Why? Coasting.....22 *Illustrations*..107-110
Catalogues.....117
Cellar, Draining a Wet..... *Illustrated*.. 100
Churns, Swedish, Stiernward's.....2 *Illustrations*..100
Compost, Materials for..... 94
Coverer, A Handy Corn..... *Illustrated*..100
Dairying, Swiss, The Simmenthal Cow.2 *Illustrations*. 95
Drags, Smoothing and Pulverizers....2 *Illustrations*.. 96
Experiments, The *American Agriculturist*..... 88
Fences and Fencing.....10 *Illustrations*..92-93
Fraxinella, The..... *Illustrated*.. 103
Fruit-Growing in Texas..... .....2 *Illustrations*.. 103
Garden, Flower and Lawn..... [86
Garden, Kitchen and Market..... 85
Garden, The Fruit..... 85
Greenhouse and Window Plants..... 86
Greens for Everybody.....104
Hedge, The Honey Locust..... 105
Hints and Helps for Farmers: Draining Sloughs, To Cure Smoke Meat, To Tar a Rope, Harness Bench..... 5 *Illustrations*.. 100
Hints for Farm Work..... 84
House Plan, Costing $1,300..... 4 *Illustrations*.. 94
HOUSEHOLD: Monograms for Needle-Work, A Burlesque Art Gallery, Household Notes and Queries, The Use of Apples, A Slipper-Case, Selecting Wall-Paper..... .....5 *Illustrations*..106-107
Humbugs, Sundry..... *Illustrated*.. 89
Ice-Pond, An Artificial.....3 *Illustrations*..100
Markets for March..... 87
Milk, What is It?..... 96
Nuts and Nubbins.....116
Orchard and Nursery..... 85
Pans, Washing Dairy.....4 *Illustrations*..101
Parent Upon Offspring, Influence of..... 99
Peas in Plenty.....105
Pheasant, The Ringed..... *Illustrated*.. 83
Plumbing..... *Illustrated*.. 93
Pop-Corn and Its Varieties..... .....4 *Illustrations*..105
Science Applied to Farming, LV..... 91
Smut, The Onion.....3 *Illustrations*..104
Sorghum in America—Its Introduction.....116
Strawberry, The Sharpless..... *Illustrated*..103
Sugar, Manufacture of Amber Cane.....7 *Ills*..101-102
Vegetables, Trials of, in 1879..... 86
Ventilation of Barns and Stables .....5 *Illustrations*.. 96
Weevil, The White Pine..... 93
Wind-Engines, Improvements in..10 *Illustrations*..98-99
Yeast as an Insect Destroyer..... 99

INDEX TO "BASKET," AND OTHER SHORT ARTICLES.

Alkali Soils.....116
Apples, Assorting..... 90
Artichokes, Jerusalem...115
Ashes, Leached..... 90
Bees By Mail..... 90
Cholera, Chicken..... 84
Churning, Trouble in.... 89
Color, Off..... 89
Corn in Illinois..... 90
Edition, The German....115
Farming, Mixed.....116
Fish as Fertilizer.....115
Gray, Alfred, Death of...116
Hedge, Making a..... 90
Insect Work..... 84
Knife, A Good.....116
Letter, An Unanswerable. 89
Oil Stones in N. Carolina. 90
Pages Worth Reading... 88
Paints, Asbestos Liquid.. 89
Peddlers, Tree, Again...116
Plant, What to, in Garden. 88
Pleuro-Pneumonia in Penn90
Poultry Feeding..... 115
Seeds, Honey Locust.....115
Shaker Village Notes.... 90
Society, Mich. Agricult'l. 90
Society, The N. Y. Hort... 90
Soda, Nitrate of..... 88
Subscriptions, Pleasant.. 90
Terms to Australia, etc..115
Toads..... 88
Trees, Young Forest.....116
Widows and Orphans..... 88

Chicken Cholera.—"J. R. S.," Buffalo, N. Y., who makes a specialty of Plymouth Rock chickens and Bronze Turkeys, writes: "The cholera has been in the neighborhood for the last three or four months, and some six weeks ago I discovered it in my flock of Plymouth Rocks. On its very first showing, I made up a strong ooze or decoction of White Oak bark, by boiling about a peck of the inside bark, cut fine, in water enough to cover it; corn or meal was soaked in this liquid, and fed to the whole flock, both turkeys and chickens, and to both sick and well, twice a day for some four days. The sick recovered in about two days. No more were taken sick, and all are as well as ever. I did not wait for the disease to kill off any, but took it in it first stages.

Insect Work.—"D. L. P." sends from Little Rock, Ark., a piece of stem of a pear tree, which has a clear groove all the way around it, cut half way through the wood, as neatly as if it had been put in a lathe and turned. Mr. P. is desirous of knowing what does the work. It is done by an insect called "The Girdler," of which we hope to give an engraving at another time.

Calendar for March, 1880.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	M	6 35	5 50	11 43	6 34	5 51	11 39	6 32	5 53	11 34
2	T	6 34	5 51	morn	6 32	5 52	morn	6 31	5 54	morn
3	W	6 32	5 52	0 55	6 31	5 53	0 55	6 29	5 55	0 44
4	T	6 30	5 53	2 1	6 29	5 55	1 55	6 28	5 56	1 49
5	F	6 29	5 55	2 57	6 28	5 56	2 52	6 26	5 57	2 46
6	S	6 27	5 56	3 44	6 26	5 57	3 39	6 25	5 58	3 34
7	S	6 25	5 57	4 22	6 25	5 58	4 19	6 24	5 59	4 14
8	M	6 24	5 58	4 53	6 23	5 59	4 51	6 22	6 0	4 49
9	T	6 22	5 59	5 22	6 21	6 0	5 20	6 20	6 1	5 19
10	W	6 20	6 1	sets	6 20	6 1	sets	6 19	6 2	sets
11	T	6 19	6 2	7 6	6 18	6 2	7 5	6 17	6 3	7 4
12	F	6 17	6 3	8 11	6 16	6 3	8 9	6 16	6 4	8 7
13	S	6 15	6 4	9 15	6 15	6 5	9 12	6 15	6 5	9 9
14	S	6 14	6 5	10 18	6 13	6 6	10 14	6 13	6 6	10 10
15	M	6 12	6 6	11 21	6 11	6 7	11 14	6 11	6 7	11 9
16	T	6 10	6 7	morn	6 10	6 8	morn	6 10	6 8	morn
17	W	6 8	6 9	0 17	6 8	6 9	0 11	6 8	6 9	0 5
18	T	6 7	6 10	1 9	6 6	6 10	1 3	6 6	6 10	0 58
19	F	6 5	6 11	1 56	6 5	6 11	1 50	6 5	6 11	1 45
20	S	6 3	6 12	2 37	5 3	6 12	2 32	6 3	6 12	2 27
21	S	6 1	6 13	3 12	6 1	6 13	3 7	6 2	6 13	3 3
22	M	6 0	6 14	3 42	6 0	6 14	3 39	6 0	6 14	3 36
23	T	5 58	6 15	4 10	5 58	6 15	4 8	5 59	6 15	3 59
24	W	5 56	6 17	4 36	5 57	6 16	4 35	5 57	6 16	4 34
25	T	5 54	6 18	5 1	5 55	6 17	5 2	5 55	6 17	5 2
26	F	5 53	6 19	rises	5 53	6 18	rises	5 54	6 18	rises
27	S	5 51	6 20	8 11	5 52	6 19	8 8	5 52	6 19	8 5
28	S	5 49	6 21	9 28	5 50	6 20	9 24	5 51	6 20	9 19
29	M	5 47	6 22	10 43	5 48	6 21	10 38	5 49	6 21	10 32
30	T	5 46	6 23	11 52	5 47	6 22	11 46	5 48	6 22	11 41
31	W	5 44	6 25	morn	5 45	6 24	morn	5 46	6 23	morn

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	3 6 23 ev.	6 11 ev.	5 59 ev.	5 47 ev.	5 17 ev.
New M'n	10 8 8 ev.	7 51 ev.	7 39 ev.	7 27 ev.	6 57 ev.
1st Quart	18 7 32 ev.	7 40 ev.	7 28 ev.	7 16 ev.	6 46 ev.
Full M'n	26 8 39 mo.	8 27 mo.	8 15 mo	8 3 mo.	7 33 mo.

AMERICAN AGRICULTURIST.

NEW YORK, MARCH, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

Spring Work.—The spring of the Almanac now begins; but the spring-like weather during a large portion of this winter, has allowed the spring work of the Middle, Southern, and Western States, to be greatly forwarded. For the first time in many years, the writer has been plowing through nearly the whole of January, and hundreds of other farmers have done the same. Fencing, ditching, clearing wood-land, and even sowing grass-seed, has been extensively done, as though spring had already come. Sometimes, "the most haste is the worst speed," and it remains to be seen, if, after all, the season's work will be benefited. It is a peculiar time, in which caution should be exercised, lest work done too soon, may need to be done over again.

Spring Wheat.—Spasmodic efforts are made now and then, to grow spring wheat in localities where fall wheat only should be sown. Spring wheat requires a cool climate, and the hot and early summers of the Middle States, are not favorable to it. Nevertheless, many farmers have "tried once more," and have failed, as might have been expected, and as we have often given warning would be the result of attempts to grow this class of wheat too far South. Southern New York, New Jersey, and Pennsylvania, are out of the spring wheat latitude, and a line west from Central New York, will as nearly as possible separate the fall wheat and spring wheat districts. Where spring wheat is sown, the seed should be in the ground as early as the soil can be fitted for it.

Oats follow spring wheat, being somewhat less hardy. It is thought by some, that oats will take no harm from careless seeding. But this is a mistake, for a good crop, deep covering in a well prepared soil is needed; shallow sown seed does not tiller; while that sown deep will tiller about as much as wheat; with good covering, the seed may be sown much earlier, and will be safe against changes of the weather, while seed near or on the surface, will be destroyed either by frost, or by dry weather, as soon as it sprouts.

Covering Seed.—Experience will satisfy any one, that drill-seeding is far better than broadcast sowing; there is a saving of seed, every good seed grows, and none is wasted, and the plants having a better root, are hardier and more vigorous. But a drill costs a large sum, is used but twice a year, and for a short time, and for a single purpose only. An implement that will serve more than one purpose is economical. For instance the Acme Pulverizer, described on page 96, not only breaks up, mellows, and levels the ground, but it covers seed as well, and evenly, as a drill, leaving similar ridges and furrows. With such a machine, all the work subsequent to the plowing, may be done, and well done; for, by a little ingenuity, a broadcast sower may be attached to it. Inventors will, no doubt, in time furnish us with a machine that will plow several furrows, mellow the ground, and sow and cover the seed, at one operation.

Fertilizers for Spring Crops.—Top-dressing fall-sown crops, should be done this month if at all. The returning warmth first affects the roots, and they start to grow before the leaves. The stimulant is thus needed for the roots, before the upper portion has appeared to grow. A dressing of 150 or 200 pounds per acre, of any good artificial fertilizer, can be used with profit on any crop, if applied at the proper time, when the growth begins to start.

The present Necessity of American agriculture, is larger crops at the same cost, or a less proportionate cost, than our present small ones. This result can only be secured by additional fertilizing. The present average of our crops is not more than one-fourth of that which the soil is capable of producing, and this extra three-fourths may be produced without any more labor by the use of fertilizers or additional manures; but fertilizers chiefly.

Artificial Fertilizers add to the soil certain elements in a condition in which they are immediately active, and force a strong, vigorous, early growth, and so enable the plants to push out a large number of feeding roots, which find out, and appropriate the manure later, when it is in the best condition for plant food.

A Strong Plant Digests its Food better than a weak one, and its appetite, so to speak, is more vigorous, precisely as is that of a strong, healthy young animal. It is with the plant as with the animal; early feeding, and vigor of growth, bring early and vigorous maturity. The farmer should study to get early a strong and healthy growth.

There is no Fear of a Surplus.—The world's markets are at our feet. The fear that we may produce more than can be disposed of, is a bug-bear and a phantom. It has been conclusively shown, that at a certain price, we can control all the European markets, and that this price, while it pays us fairly, is too small for a profit to the European farmers, who have to pay large rents, heavy taxes, employ expensive labor, and use costly fertilizers.

Think for a Moment!—There are seven millions of soldiers in Europe, who are non-producers, and expensive consumers; two or three million of army horses, all eating, and not working; emperors, kings, princes, and titled persons of all kinds, who are supported in the greatest luxury out of the public revenues; and "the farmer pays for all."

We Need not Fear to Compete with farmers so burdened; our prosperity consists in lessening the cost of our produce, and selling it to those nations, who thus hamper themselves with burdens too grievous to be borne; becoming in fact, the food producers for a large portion of the population of the world, nearly one-half living without labor.

All that is Necessary is to study and learn accurately the true principles of our profession as farmers, and put in practice the most effective work. How to do these, is what the *American Agriculturist* has taught, and is still teaching.

Fodder Crops.—It has been proved repeatedly, that one acre of good green fodder will feed two cows through the summer. Fodder crops must be put in early. A mixture of oats and peas is the best crop for early cutting, to come in after the first clover, which follows the rye. The two sown together, will yield, on one acre, about as much as if sown separately on two acres. This may be doubted,

but it is true. Tall growing leafy oats, and tall peas, yield the most fodder; the "Black-eye Marrowfat" pea, grown in Canada as a field crop, is the best for our use, the seed being free from weevil. For a second crop, the earliest small "Canada Gray" pea may be sown. The fodder is in the best condition for cutting, when the peas are in full blossom.

Southern Cow-Peas will produce good green fodder for late use, but cannot be sown until May, or after corn is planted. Those who wish to sow them, should look for seed, as it is not always to be had.

Seeds.—All the seeds that may be required, should be procured at once. There are some kinds of seed that are better to be changed occasionally, oats and potatoes are of this kind, and should be procured from a northern locality, where the oats are hardier, and the potatoes larger and more vigorous.

Clover and Grass Seed.—Clover may be sown this month. When the ground is lifted and cracked by a light frost, the seed may be sown with good effect. But the preferable method is, to sow so soon as the soil is dry enough, and then run over the ground with a light smoothing harrow, and spread 150 lbs. of fertilizer immediately. Orchard-Grass is a most valuable kind to sow with clover; it is early and late, and is unsurpassed for cutting for soiling, or for hay. Three bushels of seed per acre, is not too much, as close seeding is needed, to prevent the grass from forming large clumps or stools.

Grass Lands.—It is a mistake to suppose that our climate forbids the success of permanent grass for meadows and pastures. If the right kind of land is chosen, low, moist, and full of vegetable matter, and is kept well manured, and occasionally re-seeded, we can have permanent grass as well as other countries. But it is necessary to sow, and encourage a number of kinds of grass, those with creeping roots being preferable, if the quality is good. This subject is worthy of study and experiment.

Rolling.—The roller is both a good and a bad implement; good when rightly used, but very bad otherwise. One good use of it is, to run it over meadows early in the spring, to smooth the surface, press in stones and tufts, mole-runs, and other irregularities. Grain fields are also benefited by rolling, which crushes any lumps left after the winter, presses in roots that may have been thrown out, and covers grass seed. Light rollers are the best, if a heavy one is needed, it is always easy to load a light one, but one cannot make a heavy roller light.

Live Stock.—It is a critical time with young animals, and sometimes with old ones. Those that have been well kept, will continue to do well, but it is safest to give all young animals, especially calves, a dose or two of physic. The blood becomes affected by the dry feeding, and close herding of the winter, and some laxative is required. Otherwise the danger of febrile diseases, of which Black Quarter (anthrax or carbuncular erysipelas), is the most frequent, will be imminent. Two ounces of Epsom Salts, or half an ounce of Hyposulphite of Soda, given twice, may save a calf. A pint of Linseed Oil, given two or three times to a cow or a horse, will help the digestion, loosen the hide, and facilitate the change of coat, which is accompanied by irritation of the skin, and slight fever.

Vermin.—Make a clean sweep of lice, ticks, fleas, and other vermin, as soon as possible. Oil or grease is the best basis for an effective remedy, and Sulphur is perhaps the best thing to add to the oil. One part of Kerosene, added to four parts of Linseed Oil, makes an excellent application, that is not in any manner injurious to the skin. Ticks may be picked from sheep and lambs. They will come out on the fleece on a warm day, and the best instrument with which to kill them, is a pair of sharp pointed scissors. Kill at the same time every round, red egg that may be found.

Poultry.—"The early chick gets the early worm," and the sooner begins to feed itself. March pullets are those which fill the egg basket in the winter time. Therefore set all the broody hens for which eggs can be procured as soon as possible, and take great care of the chicks which come in this month. A warm run out of doors may be made under a hot-bed sash, arranged between two coops, and laid on boards set on their edges.

A Farm Hospital.—There will often be accidents and sick animals on a farm. The greatest care cannot always insure against accidents. A pen or close stall made in a warm shed or out building, will be found very useful for sick animals, whether a horse, cow, calf, or fowls. It will be useful for a calving cow, or to keep weaning calves in. It should be at least 12 feet square, so as to give sufficient room.

Work for Stormy Days.—Stormy days may be made available for putting all the machines in good order, cleaning and oiling them. This may be done profitably twice during the winter, for a machine depreciates more when idle, than when at work. This fact is well known among machinists, but overlooked by farmers, and their machinery is neglected.

Remember, Lime-Wash is a valuable purifier for spring use, anywhere; it cleanses and sweetens.

Notes on Orchard and Garden Work.

Our country is so large that it is not often that remarks about the weather can have a general interest. All along the Atlantic Coast, and extending for a varying breadth inland, is a district in which, up to the first of February, there was practically no winter. The large number of our readers within this district are much interested in the weather question, which also concerns others, especially fruit growers, outside of it. What is to be the result of this unusually warm weather which prevailed for weeks together? In many cases vegetation in fruit trees, shrubs, etc., has been too far excited to sustain a sudden change to real winter weather (and as we write such a change has come) without injury. To what extent next summer's fruit crops are affected by the weather cannot yet be told, and the anxiety of the fruit grower as to his prospects must continue until after blossoming time. There should be no delay in purchasing all needed implements, fertilizers, seeds, etc., and many who are just starting out in garden and orchard work, will ask: "Where shall I buy?" A word just here may save both the questioners, and the Editors of the *American Agriculturist* unnecessary trouble. It is to be remembered that all *suspicious* business houses, manufacturers, and dealers are excluded from our advertising columns; only those obtaining space of whom we would order goods ourselves if needed. By a careful consultation of these business notices the question "where to buy" may be answered at once. These advertisers are always glad to furnish information, by sending catalogues of their goods, and to reply by letter. In most cases it is better for those desiring to purchase, or to obtain information about implements and other articles, to write directly to the dealers rather than to us. In garden work there are two extremes to be avoided: being always behind the season, and always ahead of it. The soil should not be worked when it is so wet that it is sticky, and will afterwards dry into a hard mass—and on the other hand it should be worked so soon as it is dry enough. Let both the season and the crop go along together to obtain the best results.

Orchard and Nursery.

In planting an orchard, the ground should first be prepared by thorough plowing and manuring. This matter is often ignored, while the fact is that, except upon new land, unless the soil taken for the orchard is in at least as good condition as would be regarded proper for wheat, corn, or other farm crops, a paying orchard cannot be expected. It would have been better to have prepared the land last fall, but the failure to do so need not prevent one from planting; plant now, manure later. The trees should be ordered at once, as a brief delay, may find the best varieties—just the ones wanted—all exhausted. If the ground is not ready when the trees come, they should be heeled-in, that is, their roots covered with soil, that they may not dry out. In setting the trees, great care should be exercised; it does not pay to hurry through this kind of work. The tops should be cut back, so that the evaporating leaf-surface of the transplanted tree, may correspond pretty nearly with the reduced amount of absorbing root-surface.

Trimming before Planting.—This is a matter of much importance, the whole future of the tree depending upon its being properly done. No matter how carefully a tree may be taken up, some of its roots will be injured, and as ordinarily lifted, the trees that come from the nursery do not have half the roots that belong to them. One must exercise judgment in the matter, but it is safe to say, that one-third of the length of shoots should be cut away at any rate, and often more must be removed.

Laying Out.—The common method is the Square; but if the most is to be made of the ground, what is called the Quincunx, gives the most available space to the greatest number of trees. For this plan, with illustration for setting, see the *American Agriculturist*, September, 1879. A list of the best kinds of fruits for the orchard, is given in the Notes of the January number for the present year.

Injured Trees must be looked to; if broken down, they should be trimmed; girdled trees will need to be banked up with earth, or grafts joining the bark above and below the girdling, should be inserted.

Pruning can be continued until the sap starts, covering all large wounds with a grafting wax, made of three parts each of beeswax and rosin, and two parts of tallow, melted and thoroughly mixed. This is to be used in the melted state, applied with a brush. Some prefer to use paint instead.

Grafting.—Plum and cherry trees must be grafted earlier than the pear or apple. For directions with illustrations of grafting, see the last month's Notes.

Cions.—A good supply of cions should be secured early; they must not be cut after the sap begins to flow, unless to be inserted immediately.

Budding Stock.—The twigs and branches above the buds, that "took" last summer, are to be removed, leaving only a half-inch or so above the bud.

The Fruit Garden.

In selecting a spot for a fruit garden, choose a warm place, and as near the house as possible, that it may be both convenient for gathering, and more secure from trespassers. The soil should be well drained, deep, mellow, and enriched with well rotted manure. The importance of a good selection of varieties cannot be too strongly insisted upon. For a list of the leading kinds of the various fruits see the January number Notes; for others see the Catalogues of dealers. The selecting of new sorts for the main reliance, is not recommended. Let the bulk of the planting be of old, and thoroughly tested varieties, rather than of new and untried kinds.

Planting.—So soon as the ground is settled, plant the trees, shrubs, etc., that they may get an early start, and be well established by the time drouths come. Like animals, much depends on early growth.

Blackberries and Raspberries start very early, and it is best to set them in the fall; but very early in the spring will answer. The canes produced this year, will bear the fruit the following season.

Strawberries.—Old beds are to be uncovered. The method of cultivating the vines in rows three feet apart, is now generally considered the most satisfactory. See article and engraving of the "Sharpless" Strawberry, on page 103 of this number.

Grapes.—Every farmer's family should have all the grapes they can eat, from September to January. It is not necessary to have a large vineyard for this; a few vines, each of the best sorts, and properly treated, will give a great amount of fruit. There are hundreds of out-of-the-way places where a vine may be set, such as along a fence, or it may be by the side of a shed or barn; with good soil, and care in pruning, satisfactory returns may be expected.

Kitchen and Market Garden.

The Notes for this department last month, were unusually long, and much then given is timely now. A careful review of the subject of Hot-Beds will help those who inquire about raising early plants.

Cold Frame Plants.—Cabbages, Lettuce, and Cauliflowers, should be set out as soon as the ground can be worked. In market gardens, Lettuce is set between the rows of Cabbage and Cauliflower.

Hardy Vegetables are those that may be planted,

or the seed sown, "as early as the ground can be worked." Of such are; Beets, Cabbages, Carrots, Cress, Cauliflower, Celery, Lettuce, Parsley, Parsnip, Onion, Pea, Radish, Turnip, and Spinach. The

Tender Vegetables; Beans, Cucumber, Okra, Pumpkin, Squash, Tomato, and Watermelon, should not be sown until the ground is well warmed, or according to the old rule, "about corn planting time,"—a very safe guide in most localities.

Novelties.—New varieties are offered every year, and their claims to public favor are presented. It would be a mistake to rely upon novelties for the main crop, which should always be of well established varieties; but we advise those who can do so, to experiment to some extent with novelties as a source of pleasure, and sometimes profit.

Asparagus.—The coarser parts of the manure with which the bed was covered last fall, are to be raked off the bed and the fine portions forked in.

Greens.—See article on page 104. The remarks on Spinach there given are of special importance.

What Vegetables Shall we Raise?—For a number of years we have given a list of the standard varieties of vegetables as a guide to the inexperienced. This year Mr. Henderson gives a list of the old and reliable kinds, together with the results as obtained in his trial grounds, with the recent novelties.

Flower Garden and Lawn.

For keeping up the freshness and vigor of the lawn, a spring dressing should be given, either of ashes, guano, fine bone, Nitrate of Soda, or a rich and thoroughly fine compost. Sow grass seed on any bare spots. In planting ornamental trees, grouping, rather than formal planting or setting in rows, is to be encouraged, so far as the nature and size of the grounds will permit it to be done.

New Lawns.—Let the soil be in a fine state of tillage by thorough working and manuring, after which, for heavy clay soils, Kentucky Blue-Grass is to be sown. Red Top is best for light and sandy soils, with a little mixture of White Clover in both cases. The seed should be applied liberally, as a fine turf can only be had when the plants are crowded. All the way from two to six bushels to the acre are advised. If what we buy were all *seed*, no doubt the smaller quantity would be enough, but in the uncertain relations between chaff and seed, one can not be sure of properly thick-seeding with less than four bushels. Sow half the seed in one direction, and cross-sow with the other half. The seeding should be done as soon as the land can be put in proper condition.

Walks and Drives.—A solid foundation is the only surety for a good walk or drive; and to secure this, use large stones for the bottom, begin below the reach of frost, and smaller ones nearer the surface. A walk or drive that is cheap in the beginning will always be unsatisfactory and dear in the end.

Annuals.—Sow these in hot-beds about six weeks before the outside beds are to be ready for them.

Bulbs in beds may be uncovered so soon as warm weather sets in, covering again on very cold nights.

Turfing.—In selecting turf for use around beds and along walks, etc., see that no unwelcome weeds are thereby introduced. The foundation for the turf should be as carefully prepared, as for seed.

Greenhouse and Window Plants.

As the days get longer and warmer, the attacks of the insect pest will be more vigorous. It may be necessary to fumigate as often as twice a week, using tobacco stems freely for this purpose. For the Red Spider, thorough washings and use of the syringe are the most effectual remedy.... An abundance of water and air will be required; the sashes and windows may be left open much of the daytime.

Bulbs brought into heat will soon start and produce flowers. Those that have bloomed should be allowed to complete the growth of their leaves.

Propagation of stock of bedding plants for sale or home use should now be going on.

Seeds for plants to go into the open ground are to be sown in boxes and given a plenty of heat.

Trials of Vegetables in 1879.

BY PETER HENDERSON.

Very few new varieties of vegetables that have come under our notice have shown any special merit during the past year, though the varieties tested in our trial grounds were more numerous than ever before, numbering over 800 different sorts, and embracing nearly every class of vegetables in cultivation, all of each class being grown in the same soil and under the same conditions. The great use of this comparative test of so many different kinds is not so much to know what kinds to grow as to know what not to grow. In vegetables, as in fruits and flowers, we all offer far too many varieties; the public would be far better served if nurserymen, seedsmen, and florists would have the courage to cut out three-fourths of the varieties of fruits, vegetables, and flowers from their lists, describing only a few of the best of each class, and also naming such as proved to be specially unworthy of culture. I give the following brief notes on vegetables as they appeared in our grounds at Jersey City Heights, N. J., during the summer and fall of 1879:

Asparagus.—In October, 1878, we planted 12 roots each of Colossal, Giant, and Mr. Smalley's Defiance, but the number was too few to give any certain results. In the fall of 1879 we planted 200 plants of each kind in carefully prepared ground, and will be better able to judge this season which is best for general cultivation. I am inclined to think favorably of the Defiance, but will not hazard an endorsement until our trial is more complete.

Beans, Bush.—Flat-podded China proved earliest, Mohawk next; for general crop, Valentine's. The "Golden Wax" is a new and distinct variety that proved on a second year's trial excellent, being early, stringless, and of very fine flavor; it is one of the best shell beans. For *Pole Beans*, nothing is better than Large Lima. Giant Wax is a stringless pole snap bean, but has no special merit.

Beets.—The old Bassano is earliest, but on account of its light color, is now superseded by the Egyptian, which is by far the best of the dark colored, round varieties. Bastian's Blood Turnip, a newer kind, is second in earliness to Egyptian. The best long variety was Long Smooth Red.—*Mangels.* Norbiton Giant proved the best red, and Kinver Globe the best of the yellows.

Cabbages show no change in the past three years. For earliest, the Wakefield still leads, then comes Early Summer, only about 8 days later, but of nearly double the weight. This sort, we find, is more valued generally than any other early cabbage, as it seems to adapt itself better to all sections of the country. The Wakefield has never been a favorite in the Southern States, though almost exclusively grown by market gardeners at the North, but the Early Summer is an equal favorite, south and north, and is now perhaps most generally cultivated.

Savoy Cabbages we find are, as they deserve to be, yearly becoming more extensively cultivated. An improved variety, called Netted Savoy, introduced last season, we find to be one of the best.

Cauliflower.—Our reports from the new variety named Early Snowball, fully confirm our own tests. This was first sent out in 1877, and was illustrated in the *American Agriculturist* of Feb., 1878. It undoubtedly is the earliest, largest, and most certain to head of any variety we know. It is this season classed by some seedsmen as synonymous with the Erfurt; this is an error, as it is entirely distinct from and superior to the best strains of Erfurt. All our New Jersey market gardeners now grow it exclusively for early crop. For late crops, which are mainly grown by the Long Island gardeners, the Half Early Paris and Algiers are the best.

Celery.—The four best sorts for this section are Golden Dwarf, Half Dwarf, Dwarf Sandringham, and London Red. For market, I should advise the relative proportions of four of Golden Dwarf, three of Half Dwarf, two of Dwarf Sandringham, and one, or one-fourth as much as of the first, of London Red. In my opinion, it is always best to grow several kinds of celery; so much depends on location and season, that it is not safe to risk a crop of all one kind, as we find that varieties that will "burn" or "scald" in one place, are entirely exempt from it in another. Where the Dwarf Sandringham does well, nothing is so good, as it is always entirely solid.

Carrot.—The Danvers was tried more fully the past season, but whether our soil is not adapted to it, or from other causes, our success has not been that claimed for it as giving the heaviest crop of any variety; the Improved Long Orange for general crop proved better. For forcing under glass, nothing surpasses the Scarlet Horn, while for early crop to be bunched and sold while young, Half Long Red or Stump-Rooted is the best.

Sweet Corn.—No change from the reports of last year. Crosby's Early stands first as both earliest and sweetest. Narragansett and Minnesota are a little earlier, but not so good. The very general and large demand for the Egyptian, sent out in 1877, tells of the value attached to it; almost all agree that it is the best flavored of all the Sweet Corns; being of very large size, it is one of the latest, but is none the less valuable on that account, as it gives us a supply after the general crop is done with.

Cucumber.—The best long, forcing English kinds are Sion House and Telegraph; these fancy sorts are now getting to be much sought after by our first-class hotels and restaurants. Improved White Spine is yet mostly grown both for a main crop under glass and in the open ground. Green Prolific for pickling. The Burr or West India Gherkin is used to some extent as a fancy pickle.

Egg Plants show nothing new. New York Improved for general crop, and Long White and Black Pekin for variety.

Endive.—Moss Curled is the best for garnishing, and is equally edible with Green Curled and Batavian, the most used market kinds.

Leeks.—Carenton, very large and mild flavored, is perhaps best, though the American Flag is yet most used for general crop.

Lettuce.—As usual, our trials of this popular vegetable were on a large scale, over 50 kinds being experimented with. A number of "new names" proved to be old and well known sorts, and none among the large number proved to be new, or if any were new they had no merit to entitle them to be retained, so we again name as the best standard sorts: All the Year Round as the best *plain leaved*, Black-Seeded Simpson (new, 1878) as the best curled, and Silesia or White-Seeded Simpson as best curled for general crop. For forcing in frames Boston Market is now almost exclusively used.

Melons.—The standard market variety is the Hackensack, so-called from being extensively grown by the market gardeners near the town of that name in N. J., who, by careful selection, have brought this variety of Nutmeg Melon to a high degree of perfection. It is of large size, finely netted, green fleshed, and of excellent flavor. Surprise, a comparatively new sort, with whitish thin rind and salmon-colored flesh, is very rich in flavor, exceedingly productive, and of good size. Cassaba, a long, large kind, with yellow flesh, is also excellent either for market or private use..... *Water Melons.*—Mountain Sweet and Gipsy are the best market sorts. Phinney's Early is perhaps the earliest. The true White-Seeded Ice Cream is also one of the best.

Okra.—Improved Dwarf Green.

Onions.—Nothing different in Onions to report. Red Globe and Red Wethersfield in reds, White Globe and White Portugal in whites, and of yellows the Yellow Danvers. The varieties best fitted for the South are Queen, Giant Rocca, and Red and White Italian Tripoli, some of which grow very large, and are of mild flavor.

Parsley.—Fern-Leaved and Moss Curled.

Parsnips.—For general crop, Long Smooth, and for early, Short Round.

Peas.—American Wonder proved early and exceedingly prolific, and is without doubt the best of all the dwarf wrinkled peas; quality first-rate. We tested upwards of 20 "new" kinds, all claiming

superior earliness and productiveness; but nothing surpassed the Improved Dan'l O'Rourke for *first* early, and we therefore still recommend it as the best for general early crop. For *second* early we name first Alpha, then Fill Basket, Premium Gem, and William I. For late, Champion of England and Omega. Some of the Long Island farmers practice sowing the early varieties as a second crop in August, to be sold in October. For this purpose, Improved Dan'l O'Rourke is perhaps the best. When a good crop is thus raised, it is very profitable; but so much depends on the season that that is not always certain to be obtained.

Potatoes.—The St. Patrick has had a general and thorough trial, and not only from our own grounds, but from all sections of the country the reports are almost, without exception, so favorable that there is but little doubt of it becoming a leading sort. R. O. Bunnell, Dunmore, Pa., testifies that from 1 lb. cut into eyes (not from cuttings), and planted May 10th, he dug on Sept. 15th 226 lbs. All testimony goes to prove its wonderful productiveness. It is white, very oblong, and handsome; quality full average.....Beauty of Hebron.—A new early sort, very productive, and of good quality—a variety grown extensively in Northern New York. Genesee County King is late, but of average quality. Early Ohio is also fine and early, and will, we think, become one of our standard sorts. The earliest of all our potatoes was the Alpha, but the yield was poor.

Peppers or Capsicum.—Large Bell or Bull Nose, and Sweet Spanish, for general use. Long Cayenne and Cranberry for pickling.

Radish.—The best early kinds are Long Scarlet, French Breakfast, and Scarlet Turnip, which are nearly alike in the open ground, but for forcing the new Dark-Red Round and White-Tipped Scarlet are the best, as the tops are small and the root developes rapidly. In summer Radishes the new Olive Shaped Golden Yellow sent out the previous year proved very satisfactory. For winter, the Black and Grey Spanish and Rose China are the best.

Spinach.—We have tried over 20 samples of Spinach the past season, and find the Savoy-Leaved the best, especially for market. Our trials also developed the fact that a great deal sold for Savoy-Leaved is only the ordinary Round-Leaved Spinach. The new Thick-Leaved we find to be a very good sort, tender, and of fine quality. Large-Leaved Viroflay is a sort with large foliage; very good. We find great difference in the various stocks of Round-Leaved Spinach, some being quite inferior to others in quality and weight of crop.

Squash.—For summer varieties, Summer Crook Neck, and White and Yellow Bush. For winter, Hubbard and Yokohama.

Turnips.—For early, White and Red-top Strap-leaf; White Egg is yet rather new, but is fast gaining favor, as it is equally early as the Strap-leaf, it attains a greater size, and is remarkably handsome; it is also an excellent keeper, and can therefore be grown in fall for winter use. For second early, or winter for general crop, Yellow Globe and Golden Ball. French White is the best flavored of the Ruta-bagas; the American Improved Ruta-baga is more used, and really one of the best.

Tomatoes.—I have repeatedly given my opinion in the columns of the *American Agriculturist*, that we had reached that point in earliness with the Tomato where further progress had stopped. This was very forcibly confirmed last season. There was a great excitement among the market gardeners in the vicinity of Newark, N. J., one of them having about an acre of a "new" Tomato that was ripe 10 days before any other. The owner came to us and offered to dispose of the stock of seed. I took him through our collection, and showed him a variety that had some ripe fruit, and entirely distinct in foliage from any other. He admitted that it was very like his. A visit to his field, and comparison, showed it to be identical; and both were the old Keyes' Prolific, introduced a dozen years ago, and which is, without question, to-day the earliest of any smooth Tomato, but too small and inferior in quality for a general crop. I was never more impressed with the value of our trial ground, for had we not had this lot of Keyes' Prolific for comparison, the chances were 20 to 1 that this old variety would have again been sent out as a new sort with a new name; the man into whose possession it had come had never heard of Keyes' Prolific, and honestly thought he had a new sort.—We find that the favorite Tomato for general use is Acme, early, smooth, prolific, and solid. The color is of a purplish shade, and for some time this was an objection to its sale in the markets, but its other excellent qualities have offset this, and now it sells equal to anything offered.—Golden Trophy is a very pretty fancy variety, of a rich shade of yellow, is equal in all respects to the original, red Trophy, which is yet a standard sort, though not often seen so smooth as at first. The kinds which appeared to be best for general market purposes with us the past season were as the year before, viz.: Conqueror and Canada Victor, while for canning, Paragon and Hathaway's Excelsior are equally desirable.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending Feb. 10th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats*
24 d's *this* m'th	453,000	1,715,000	1,904,000	34,000	289,000	1,054,000
25 d's *last* m'th	411,000	3,105,000	3,467,000	183,000	312,000	1,128,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	321,000	23,226,000*	3,807,000*	118,000	237,000	1,019,000
25 d's *last* m'th	316,000	18,579,000*	4,091,000*	159,000	408,000	1,234,000

* Including sales for forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1880	453,000	1,715,000	1,904,000	34,000	289,000	1,054,000
28 days 1879	337,000	2,131,000	1,314,000	58,500	429,000	431,000
SALES.	*Flour.*	*Wheat.*	*Corn*	*Rye.*	*Barley.*	*Oats.*
24 days 1880	321,000	23,226,000	3,807,000	118,000	237,000	1,019,000
28 days 1879	345,000	7,316,000	4,104,000	333,000	290,000	1,107,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush
Feb. 5, 1880	1,822,400	736,350	257,400	904,300	1,568,450	328,000
Feb. 10, 1879	2,918,396	1,501,708	513,557	859,804	734,745	85,154
Feb. 11, 1878	1,674,035	774,470	208,846	831,673	1,415,633	318,079
Feb. 7, 1877	3,083,819	2,302,261	374,142	671,114	956,114	388,605

4. *Exports from New York, Jan. 1 to Feb. 8.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1880	382,650	2,351,000	2,048,500	262,450	58,300	13,100	6,100
1879	311,000	4,417,000	2,821,000	412,000	1,217	19,100	32,000
1878	278,799	4,605,476	1,756,258	184,461	305,382	19,878	28,384
1877	153,588	1,276,859	1,793,883	53,533	71,283	15,309	66,191
1876	241,698	1,843,457	1,731,215	15,387	——	35,537	168,137

Of the notable features of general business, since our last Review, have been the growing ease in Money, which contributed to stimulate operations; very extensive dealings in the Public Funds, as also in miscellaneous Bonds, Mortgages, and Stocks at advancing prices; increasing activity and buoyancy in Real Estate, Dry Goods, Hardware, Metals, Drugs, Dyes, Chemicals, and toward the close in Groceries, with an improved demand also for Boots and Shoes, Fish, Petroleum, Naval Stores, Paints, Tobacco, Rice, Hemp, Oils, and most kinds of building materials....Hides and Leather weakened perceptibly in price, on a tamer movement....Hay and Straw met with a fair inquiry and generally strong quotations.....Seeds attracted more attention, and closed more firmly....Cotton has been freely dealt in, chiefly in the option line, but at variable rates, opening buoyantly but closing in favor of buyers... A better demand has been reported for Wool, which has been quoted somewhat firmer, leaving off with an upward tendency, in view of comparatively meagre supplies of domestic product available... Provisions have been quite active, but, in the instance of hog products, fluctuating frequently in value, closing generally lower. Butter also yielded slightly, and Beef declined a trifle. Cheese and Eggs advanced rather sharply... Breadstuffs have been unusually variable, on freer movements in Wheat, chiefly in the speculative interest, though other articles, in this line, exhibited only a moderate degree of activity. Export purchases of Wheat and Flour continued on a restricted scale, the relatively high prices current here impeding operations. Corn met with a readier market for shipment, and, early in the month, at hardening prices. A good demand was noted for Oats, and a fair inquiry for Rye and Barley; Oats at stronger rates; Rye at irregular figures; while Barley receded, under more liberal and urgent offerings, with a moderate call for export account, mainly for feeding or low grade stock. The visible supplies of Wheat,—embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, embraced about 30,100,000 bushels;—of Corn, 13,100,000 bushels; of Rye, 979,000 bushels; of Barley, 4,155,000 bushels; and of Oats, 3,080,000 bushels, against, on Jan. 17, an aggregate of 31,024,000 bushels Wheat, 11,927,100 bushels Corn, 1,068,100 bushels Rye, 4,403,100 bushels Barley, and 3,318,000 bushels Oats. Receipts at this port have fallen off considerably, due, in good part, to interruptions in the forwarding movement, resulting from speculative manipulation of the markets of the interior, as well as the seaboard. Ocean grain freights further declined to the lowest quotations made here, on actual business contracts, in many years, having been down, by steam to Liverpool, to 2¼d. per bushel; to Bristol, by steam, to 3@3¼d. per bushel; to Antwerp, by steam, to 4d. per bushel; and by sail to Cork, for orders, 3s. 9d.@4s. per quarter of 480 lbs. Toward the extreme close, a livelier inquiry was developed for Flour and Wheat, especially for shipment, favored by the latest market advices by cable, which were of an encouraging tenor, leading to a rally in prices of Flour, of 10@20c. per bbl., and of Wheat, of 2@3c. per bushel, winding up firmly. Important shipments of Wheat, on through freight account, were reported recently, and represented as, in good part, consignments, receivers and holders availing themselves of the current extremely low rates on ocean freight, in which, however, a slight rise occurred in the final negotiations. Corn fell severely, particularly new crop, under a pressure to realize. Oats also weakened again, and Barley closed barely steady. Rye was advanced sharply, in view of the light offerings, with prime Western and State, boat loads, quoted up to 95c. bid, and as high as $1 asked, per bushel. Hops left off very tamely, owing, partly, to the very confident views of sellers of the better qualities; very choice to fancy lots of State having been held as high as 38@40c. per lb.

CURRENT WHOLESALE PRICES.

	Jan. 13.	Feb. 10.
FLOUR—Super to Extra State	$5 00 @ 6 00	$4 60 @ 5 75
" Super to Extra South'n.	5 00 @ 8 50	4 60 @ 8 25
" Extra Genesee	5 85 @ 7 25	5 75 @ 7 00
" Superfine Western	5 00 @ 5 60	4 60 @ 5 25
" Extra Western	5 50 @ 9 00	5 25 @ 9 00
" " Minnesota	5 75 @ 9 00	5 50 @ 8 75
BUCKWHEAT FLOUR, ₱ 100 lbs	2 10 @ 2 35	1 60 @ 1 90
BUCKWHEAT, per bush	— @ 62	60 @ 62
RYE FLOUR, Superfine	5 00 @ 5 40	4 60 @ 5 00
CORN-MEAL	2 60 @ 3 30	2 80 @ 3 35
CORN-FLOUR, per bbl	4 00 @ 4 50	4 00 @ 4 50
OAT MEAL, ₱ bbl	5 00 @ 7 00	4 75 @ 5 25
WHEAT—All kinds of White	1 35 @ 1 50	1 35 @ 1 46
" Red and Amber	1 15 @ 1 35	1 20 @ 1 47½
" Spring	— @ —	1 20 @ 1 40
CORN—Yellow	58 @ 70	58 @ 67
" White	58 @ 70	58 @ 67
" Mixed	56 @ 60	56 @ 61½
OATS	46 @ 51½	46½@ 53
RYE	92 @ 95	93 @ 95
BARLEY	70 @ 1 08	55 @ 1 05
HAY—Bale, ₱ 100 lbs	60 @ 95	65 @ 90
STRAW, ₱ 100 lbs	50 @ 95	45 @ 1 05
COTTON—Middlings, ₱ lb	12⅝@ 12¾	13 @ 13¼
HOPS—Crop of 1879, ₱ lb	30 @ 40	27 @ 38
" " 1878, ₱ lb	7 @ 18	7 @ 20
" olds, ₱ lb	7 @ 12	4 @ 12
FEATHERS—Live Geese, ₱ lb	40 @ 55	40 @ 55
SEED—Clover, West. & St. ₱ lb	9¼@ 10¾	7½@ 10¾
" Timothy, ₱ bushel	2 40 @ 2 75	2 75 @ 3 00
" Flax, ₱ bushel	1 65 @ 2 00	1 65 @ 1 90
TOBACCO, Kentucky, &c., ₱ lb.	3½@ 14	3½@ 14½
" Seed Leaf, ₱ lb	6 @ 40	6½@ 40
WOOL—Domestic Fleece, ₱ lb	30 @ 56	30 @ 56
" Domestic, pulled, ₱ lb	15 @ 55	17½@ 55
" California	18 @ 42	15 @ 42
TALLOW, ₱ lb	6⅝@ 6¾	6½@ 6¾
OIL-CAKE—₱ ton	35 00 @ —	32 50 @33 50
PORK—Mess, ₱ barrel	12 75 @13 00	12 00 @12 25
" Extra Prime, ₱ barrel	10 50 @ —	10 25 @10 50
BEEF—Extra mess	11 00 @11 50	10 75 @11 25
LARD, in trcs. & bbls, ₱ 100 lb	7 90 @ 8 40	7 50 @ 8 00
BUTTER—State, ₱ lb	18 @ 37	17 @ 36
" Western, poor to f'cy, lb.	14 @ 37	12½@ 36
CHEESE	9 @ 14	11 @ 15
EGGS—Fresh, ₱ dozen	12 @ 18	13 @ 20
POULTRY—Fowls, ₱ lb	6 @ 10	7 @ 11
" Chickens, ₱ lb	5 @ 16	10 @ 13
" Roosters, ₱ lb	4 @ 5	5 @ 6
Capons, ₱ lb	— @ —	16 @ 20
Turkeys—₱ lb	8 @ 13	7 @ 14
Geese, ₱ pair	80 @ 1 25	1 00 @ 1 75
Geese, ₱ lb	5 @ 10	8 @ 12
Ducks, ₱ pair	45 @ 80	50 @ 65
" ₱ lb	8 @ 18	10 @ 14
DUCKS, Wild, ₱ pair	25 @ 3 25	30 @ 3 00
APPLES, ₱ barrel	1 75 @ 4 00	1 75 @ 3 00
POTATOES, new Bermuda, bbl	— @ —	6 00 @ 7 00
" ₱ bbl	1 25 @ 2 00	75 @ 2 00
TOMATOES, new, W. I., pr bx	— @ —	1 00 @ 1 25
TURNIPS ₱ bbl	75 @ 87½	50 @ 75
BEANS—₱ bushel	1 45 @ 1 95	1 35 @ 1 80
PEAS—Canada, in bond, ₱ bu	— @ 86½	Nominal.
" new, green, ₱ bag	1 80 @ 1 85	1 75 @ 1 80
" new, Florida, per crate	— @ —	1 50 @ 2 50
STRING BEANS, nw, Flor., p.c	— @ —	3 00 @ 4 00
CARROTS, ₱ bbl	75 @ 1 00	62½@ 87½
BEETS, ₱ 100 bunches	87½@ 1 25	1 00 @ 1 25
" new Bermuda, per crate	— @ —	2 00 @ 2 25
CABBAGES—₱ 100	4 00 @ 7 00	4 00 @ 7 00
ONIONS—₱ bbl	2 25 @ 4 50	2 25 @ 4 75
CRANBERRIES, per bbl	6 00 @ 9 00	6 50 @ 8 75
SQUASH, ₱ bbl	1 12½@ 1 50	1 00 @ 2 50
CELERY, per dozen bunches	75 @ 1 00	1 25 @ 2 25

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Jan. 12	9,059	204	1,031	27,079	38,286
Jan. 19	14,183	246	988	38,421	32,982
Jan. 26	12,786	197	915	25,008	32,451
Feb. 3	12,648	172	1,159	36,655	32,718
Feb. 10	10,890	167	1,202	34,339	33,672
Total for 5 *Weeks*	59,566	986	5,295	161,502	171,109
do. *for prev.* 4 *Weeks*	43,503	1,031	5,130	100,719	118,278

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	11,913	197	1,059	32,300	34,222
do. do. *last Month*	10,877	263	1,282	25,180	29,569
do. do. *prev's Month*	10,266	314	1,613	30,906	45,590

Prices for beeves the past five weeks were as follows:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
Jan. 12	6¾@11 c.	8¾@10 c.	9¼c.
Jan. 19	7 @11 c.	8¾@10 c.	9¼c.
Jan. 26	7 @11½c.	9 @10 c.	9¼c.
Feb. 3	7 @11½c.	8¾@ 9¾c.	9¼c.
Feb. 10	7½@11 c.	8¾@ 9¾c.	9¼c.

Beeves.—The market opened weak in spite of light receipts, but without any decline in prices; an export of 2000 head the first week helping it greatly. In fact, this trade is all that sustains the values of live stock in the United States, for a shipment of 5,770 head in one week—a quantity unprecedented, and showing to what enormous proportions the business has grown—is clearly the mainstay of the trade. This outlet, like a pendulum of a clock, checks irregular movements, and the past month has kept a very steady market. Towards the close, prices gave way a little and sales were free at a small decline. Dressed beef was offered in plenty at 7¼c. per lb.; the range for poor stock 55 to 56 lbs. per 100, was 7¼ @ 8¼c. per lb. for fair to prime, 8¼c. @ 10c. for 56 lbs. per 100, and extra to dress, 57 lbs. per 100 weight, 11½c. per lb. ....**Cows.**—There has been a quiet sort of demand for good milkers, having been taken at prices somewhat lower for everthing but choice family cows. The market closed steady at $30 to $50 for fair to good, and $60 to $65 for choice....**Calves.**—Business in veal has been brisk, except for grassers, which have been neglected under a good supply of veals, and brought 2¾ to 3¾ cents per lb. alive. Veals have sold for 6c. to 8¼c. per lb. dressed weight....**Sheep and Lambs.**—Prices have been well sustained and an active demand has existed during the past five weeks. Lambs ranged from 6½c. @ 7¼c. per lb. live weight, and sheep from 5c. to 6¼c. per lb.; some choice wethers have sold at $6.60 per 100 lbs. The closing prices were without change on a firm market.... **Swine.**—A quiet market and steady prices have marked the past five weeks. The business has been done mainly at 5c. @ 5¼c. per lb., and at the close, prices were slightly lower, the bulk of the sales being at 5c., and a few at 5¼c. per lb.

The Horse Market.—Stock has been accumulating for months past with nothing to move it but inquiry. A few good driving animals have changed hands, but for work and common horses trade has been entirely nominal. The outlook seems to foreshadow a late and slow trade for spring with unsatisfactory prices for dealers.

Prices of Feed.

Cotton-seed meal,	per ton.	$30.00
Linseed-cake meal,	"	37.50
Middlings	"	24.00
Bran	"	23.00
Corn-meal	"	23.00

Prices of Fertilizers.

Nitrate of Potash (95 per cent.), per lb.	9 @9½c.
Sulphate of Potash (potash 41 per cent) per lb.	3½@4 c.
do. do. (potash 27½ per cent) per lb.	1½@1¾c.
German Potash Salts (potash 12 to 15 p.c.) p. ton.	$15.00@18.00
Muriate of Potash (potash 50 per cent), per lb.	2 @2¼c.
Nitrate of Soda, per lb.	4¾@5 c.
Sulphate of Ammonia (25 per cent.), per lb.	4c.@4¼c.
Dried Blood (ammonia 13 per cent) per ton	$40.00@45.00
No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ₱ ton	$56.50
do. do. Lobos, do. do. do.	47.50
do. do. guaranteed, ₱ ton, cargo K	56.00
do. do. rectified, per ton, 9.00 p. c.	65.00
do. do. do. do. 3.40 p. c.	51.00
Soluble Pacific Guano, ₱ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone,	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs.	25.00
do. do. do. (light soils) per 1,000 lbs.	25.00
do. do. do. "A" Brand, (wheat) ₱ 1,000 lbs.	30.00
do. Bone, strictly pure, meal per ton	42.00
do. do. do. medium do.	36.00
do. do. do. dissolved do.	42.00
do. Fruit and Vine Manure do.	35.00
Stockbridge Rye Manure, per ton	45.00
" Wheat do do	45.00
" Seeding Down Manure, per ton	40.00
Bowker's Wheat Phosphate, per ton.	40.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobacco and Grain, per ton.	45.00
Walton, Wham & Co.'s Raw Bone Phosphate	40.00
Gypsum, Nova Scotia, ground, per ton	7.50

Pages Worth Studying.—As always, upon the approach of spring work, there is an increased number of announcements from dealers in Seeds, Plants, Implements, Fertilizers, etc., and in this year of renewed activity in all departments, the crowd is greater than ever. To avoid the least trenching upon our reading columns, four extra pages have been added to accommodate our friends, and still a large number of late comers are necessarily left out. These advertising pages are of great value to our readers as a source of information, and worth studying carefully to learn what is offered, old and new, and by whom. It is equivalent to going to a great Fair, where a multitude of reliable men exhibit what they have to supply. Reading what others say in a business way, and *how* they say it, will usually give one new thoughts and suggestions useful in his own calling. We have excluded many advertisements because not approved, or because from men not known to be, or not believed to be, every way trustworthy....☞ When corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of *this* Journal. They will know what *we* expect, and what *you* expect of them as to prompt and fair treatment.

Toads are the friends of gardeners, destroying the injurious insects in large numbers. In the extensive vegetable gardens around London and Paris, the toads are looked after with great care, and are even a part of the stock invested in the business. Many of the toads in and around London are brought from France, where they pay as high as six shillings a dozen for them.

MARCH ON.

"Forward!...MARCH!" is the general order for THIS month. Not only is it implied in the name of the month itself, but in the Season also. The hibernation, the resting of the winter, is coming to an end. Work in the Fields and in the Gardens will soon begin, where it is not already under way. Much of the success depends upon *planning well.*

Is there a man who cultivates a farm, an orchard, a vegetable or fruit garden, or a flower plot, or who raises animals, that can not find *useful* hints and suggestions in the pages of this Journal? If there is, it is *not* the paper we *intend* it to be.

But we believe it will surely pay *every one* to study these pages.

Hundreds of thousands are already doing so. What of the hundreds of thousands who do not?

We fully believe they *ought* to do so, for their own good, and if we could see them we would tell them so, and explain *why.*

As we cannot, we ask our readers to do this as a double favor to them and to us.

Last Autumn we prepared the largest and best assortment of Premiums ever offered—valuable articles to be *presented* to those who take the trouble to invite new readers, and receive and forward the names of both old and new subscribers for 1880.

All those Premiums are still offered to our friends, new and old, and will be offered during March, and until June.

March is a good month to carry on and fill out Premium Lists already in progress, and to start *new* clubs. Many thousands of such names are sent in *every* March.

We invite all our friends to take hold with fresh energy, and secure some valuable articles from our list. (If any one has not the full Premium List at hand, send at once a postal card request, and it will be forwarded free.)

IT WILL PAY A HUNDRED FOLD, to have in *every* neighborhood, at least a few good books on Animals and their Diseases, on General Farming, on Gardening, on Fruits, on Farm Implements, etc., and at least a few Standard Works on other subjects. These books *ought* to be accessible to all for reference in case of need, as well as for reading by all—a sort of circulating or reference library to be in charge of some one.

Never before was there so good an opportunity AS NOW *to get a collection of such Books at very small cost.* Any ten or more persons contributing $1.50 each, will *each* be supplied with the *American Agriculturist* for 1880, and **in addition, one Dollar's worth of Books** will be presented for each Contributor to the fund. The books may be selected from the list of **847** Good Works named in our premium sheet. Where the subscriptions are already sent in for 1880, subscriptions for 1881 may be added, when desired, to increase the Library as far as possible. Many new subscribers can also be found. *Every* neighborhood may thus secure such a Library. It only needs some enterprising man, young or old, to take hold of the matter as a leader, and he will soon have plenty of *helping* hands, and heads, and hearts. If the Men neglect it, their "Better-halves," or Daughters, always foremost in good works, should take it up.

N. B.—Special.—An Answer to many Inquirers:—*While ten subscribers for one year are preferred to one subscription for ten years,* **yet,** *when specially desired, any subscriber can pay for as many years in advance as he may desire, and count each year as one subscription in making up the Library Club above described. Thus: $15 will pay for Ten Years' Subscriptions and Ten Dollars Worth of Books for this spring only.*

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

What to Plant in the Garden, is always a puzzling question, and especially so since the very late increase in varieties. There is a great choice both as to quality and amount of product. Even in a very small garden, a right selection of seeds will make a difference of many dollars of real value in what is grown for one's own use—the labor, expense and care being the same. There is a multitude of new things worth many times as much as the old "standard" sorts, both as to quality and yield. But among the hundreds of varieties of new peas, beans, cabbages, lettuce, corn, potatoes, sweet corn, tomatoes, etc., etc., each strongly praised by some seller of seeds, the layman is sorely at loss to know what to select, and quite likely to get many poor things. To all such, the results of 800 trials given by so careful an experimenter as Peter Henderson, will be of great value. See page 86.

Nitrate of Soda, or Chili Saltpetre, is one of the leading mineral fertilizers supplied from the immense deposites in the rainless desert of Southern Peru. Attention was first called to it by Alexander von Humboldt, in the early part of this century, but it is not over fifty years ago that it was first shipped abroad to any extent. The Nitrate of Soda industry is to-day a large and rapidly growing one, there being over 250,000 tons of this fertilizer mined and exported per year, though it is not all used upon the land, a large share going to the manufacturers of chemicals as a source of Nitric Acid. It is a formidable competitor of the celebrated Peruvian Guano.

$298,760,867 for Widows and Orphans.—In studying the Statement of the Mutual Life Insurance Company, as given on page 117, we were forcibly impressed with one item, the "Policies in force January 1, 1880," amounting to nearly three hundred millions of dollars, insuring this sum to the survivors at death of the holders of 95,423 policies of insurance. As will be seen, over seven million dollars were paid to the survivors or representatives of insurers during 1879, but the receipts were over seventeen millions despite the reduced rates of insurance, and so there is a surplus of over Eleven Millions beyond the amount needed to render safe and secure the policies in this Company.

The American Agriculturist Fertilizer Experiments.

The Farmer's Own Experiments.

The enterprise first proposed and carried out by the *American Agriculturist,* has given results of great value. This plan included showing the farmer how to experiment with fertilizers, and furnishing him at cost, or less, with fertilizers of standard quality for the experiments. Some of the reports of last year's experiments, are given elsewhere by Prof. Atwater. Can any farmer who uses fertilizers at all examine these reports, and not see how valuable the knowledge thus gained must be to the experimenter? Would he not gladly have such a knowledge of the requirements of his own soil, as these farmers have of theirs?

Can there be any stronger evidence as to the folly—the wastefulness, of the promiscuous hit-or-miss use of fertilizers? It is just as important to know what the soil does not need, as it is to know what it does require, and what may be applied to it with profit. This knowledge can only be obtained from the soil, and through the medium of experiments. So well satisfied are we of the utility of the experiments already made, that we propose to continue them the present year. We commend Prof. Atwater's account of last year's experiments to the attention of every farmer. If the reader would have a similar knowledge of his own soil, we can provide him with the means of acquiring it at a very small outlay. The full explanation of the plan will be given next month; it will not, however, be essentially different from that followed last year, and which was described on pages 128-129 in April 1879.

The Experiments for 1880.

As some of the details for this year have not been decided upon, a full explanation will not be given until next month. It is not probable that there will be any essential variation from the methods as given in April 1879, and those of our readers at the South, where the season for work is already quite advanced, who wish to consider the matter earlier, may take last year's work as a general guide. The prices of the parcels may, or may not be, slightly advanced, owing to the general higher cost of most materials.

Off Color.—At a sale of a superior herd of Jersey cows, a great pecuniary loss was sustained by the owner, because the animals did not have the fancy superficial marks, now made so much of by the ruling spirits of the Jersey Herd Books. Black tongues and black switches are not strictly Jersey marks—many of the best of that breed do not have them. Breeders should remember this, and look to the milking and breeding qualities of a dairy cow, as of the most importance, and banish the expression—"Too much off color to be fashionable."

Trouble in Churning is frequently complained of in winter. Much of the trouble is due to a neglect of the temperature which can not be told with any approach to accuracy except by using a thermometer. If the cream is brought into a warm room until the thermometer shows it to stand at 60°, we rarely find any difficulty. In old times the cream was thought to be bewitched, and as the power of a horse-shoe to keep witches away is well known, it was used to drive the witches from the churn. The horse-shoe was heated red hot and dropped into the cream in the churn. It drove the witches away when it brought the cream to the right temperature.

Sundry Humbugs.

A wonderful change indeed has come over our correspondence. But a few weeks ago and we could be sure that a large, and rapidly increasing share of all of the editorial letters would have reference to Stock Speculations. So soon as the news of the action of the Post Office authorities, as given last month, was spread abroad, the whole thing collapsed. We get no more letters asking if Lawrence & Co. and the rest are "responsible," or "will do as they agree." Only the few letters that were then on the way reached us. The movement which led to the suppression of these bogus concerns, was taken by the Law Committee of the Stock Exchange, but their doings have been confirmed

IN A SERIES OF STRONG RESOLUTIONS

adopted by the Stock Exchange itself, which has given the Law Committee more power to act on behalf of that body. ....The Post Office Department is doing wonders in the way of the suppression of fraud. The shutting up of these stock swindlers is but a small portion of its good work; it has made the way of the lottery transgressor so hard, that he has been obliged to go over to Canada, and we find the Louisiana State, the Royal Havana, and the Kentucky State Lotteries in Montreal, where they

DEFY THE LAWS OF THE UNITED STATES.

The following wriggle and squirm which heads their circular, shows how badly they are hurt.

"To The Public: In view of certain new and recent regulations by which the United States Postal Authorities assume to supervise and decide what class of *mail* matter shall be sent to the citizen, thereby arrogating to themselves a right to interfere with the private correspondence of American freemen, which would not be tolerated by any monarchy in Europe, we have established a General Agency for the sale of tickets in all legalized and reliable Lotteries outside of their jurisdiction."—Merely another illustration of the fact, that "No man e'er felt the halter draw, with good opinion of the law." So far from there being any "new and recent regulations," it only happens, to the great discomfort of scamps of various sorts, that we have a Post Master General who thinks it his duty to enforce the laws made by the representatives of "American freemen," for which these chaps profess so much sympathy, (at the rate of $10 a package of tickets), and upon whom their bosh about "Monarchy in Europe" is wasted. It isn't the "American freemen" who are at all troubled. It is you

VIOLATORS OF THE LAW,

who feel the pinchings of a remarkably tight shoe..... Just as a welcome rain starts into a new growth the weeds as well as the crops, so does the return of "good times," set on foot fraudulent schemes as well as honest enterprises. The mining industry is probably on the eve of a period of development greater than has ever before been known, and taking advantage of this, all sorts of schemes, with no other metallic basis than brass, will be placed before the public. A scheme, with its office in New York with a full outfit of President, Sec'y., and a strong team of Directors, is neatly printed, and the circular shows conclusively, that a few of its $10 shares would soon make one rich, but the names of the people, are

NOT IN THE CITY DIRECTORY!

We like better the "Shakspeare" mining circular, which does not give the name of a single person, but compensates for these omissions by being headed with the somewhat startling announcement that "The Early Bird Catches the Worm." Our advice to the worm is to keep out of the way.....It seems necessary to repeat our warning about

MURDEROUS ILLUMINATING OILS.

See what was said last month about selling recipes with "rights" for people to make a so-called oil out of benzine....We gave in October last an engraving of a "Solargraph Watch," but that cost $1—while here is a "Time Indicator" of which one can get four for that price, and can afford to have, as they say in Texas: "any dimensions of time." A "Time Indicator" is advertised for 25 cents. Whoever sends that sum receives a card of the size here given. On one side are neatly printed the lines and figures shown in the engraving. At *A* is a piece cut so as to turn up and form the *gnomon*, or part of the dial that casts the shadow; a thread with a small brass ring at each end to keep it in place slides in a slit where the months are marked. One has only to set it right when the sun shines—and there it is. This "Indicator" if it doesn't tell the time,

DOES GIVE A WHOLESOME LESSON.

Upon the back of the card there is printed as follows: "Notice.—Out of every hundred that order this valuable little novelty, there is generally *one* that finds fault because he failed to receive an elegant watch prepaid for 25 cents. Of course, if any one expects a 'gold watch full jeweled,' they will find themselves slightly disappointed; but if they expect only the value of their money, they will get it in the article herewith sent."

That lesson is one that a vast number of grown people need to learn, and very cheap it is at 25 cents, with the "Pocket Time Indicator" in the bargain. If some people would only learn that other people do business to make money, and that one way to make money is

TO SELL THINGS FOR MORE THAN THEY COST,

a vast deal of trouble would be saved. To illustrate: some rifles are advertised at the very low price of $4.50, and great numbers write to ask us about the rifle. One would think that no help was needed for a person to decide whether he had any use for a $4.50 rifle. Every one old enough to be trusted with a firearm ought to know that he will not get a $50 rifle for $4.50. It is not in the nature of things that he will get anything that is worth more than what he pays for it. No one can do a profitable business at selling for 75 cents that which cost him 100 cents, and those who are in business do it for profit. A great many feel that they have been hardly used when the thing that they buy is worth just about the price charged for it and no more....We have occasionally in these columns cautioned persons in visiting cities to

AVOID ALL ADVANCES OF STRANGERS.

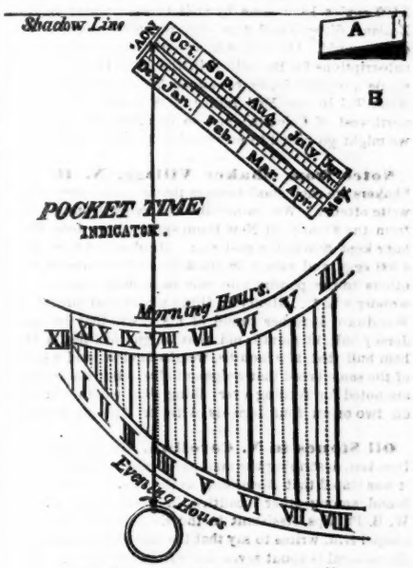
An illustration of the necessity for observing this occurred not long ago in New York. A young man from the country was asked by a plausible stranger to do him a favor. There was to be a horse auction at which a very fine horse that stranger wanted was to be sold. He, stranger, was known as a horse-dealer and judge of horses, and if he bid upon the horse, others would bid higher, but the young man, being unknown, could buy said horse very low—he, stranger, would pay $200 for the horse, and young man might buy it for as much less as he could. A nice offer, but young man had no money. "But you have your watch and chain worth $200—buy the horse, tell auctioneer you have to go to your hotel for the money, and will leave your watch until your return; you have only to bring the horse round the corner into the next street and get the money." The plan was carried out, the young man bid off the horse at $150—would go for his money, left his watch and chain, delighted with the idea of making $50 so readily, led the horse around the corner into the next street—but stranger was not there; waited, but stranger did not come—waited longer, no stranger; at last went back to place of sale—no one there! At length it began to dawn on the young man that the horse was not the only thing sold. He was out a valuable watch and chain; was *in* a horse worth all the way from $10 to $15, and a lesson about

AVOIDING THE ADVANCES OF STRANGERS,

which was worth all he paid for it.....It is a common trick of quacks travelling in the Western States, to claim to represent some Medical College in N. Y. City, or else to belong to some Medical Institute. We have already shown that no Medical College with a right to the name, ever sends out travelling doctors; the very fact that one claims this, stamps him as an impostor. With Medical "Institutes," the case is different. One man may call his doctor shop an "Institute." There is a chap going about in Ohio, representing the

"GREENLEAF MEDICAL INSTITUTE"

of New York City, and his circular has much to say about "Dr. Greenleaf." Friends have written to know about this Dr. Greenleaf and his "Institute." The fact that no location except the indefinite one of "New York City," is the most remarkable display of modesty. This "Institute," is an illustration of the truth of the proverb, "What is wanting can't be numbered."—As there is no such Institute, the quack who "can read diseases by the tongue," fully represents it.....Last month we spoke regretfully that our beloved Eddie Eastman had passed out of sight. We were mistaken; a friend sends us a New Jersey paper, with Eddie's picture all in his Indian



THE "POCKET TIME INDICATOR."

rig. We have hopes of Old Mother Noble: who knows but *he* may turn up? We always had a half way regard for Old Mother Noble; he didn't like what we said about him, and came in like a man and said so....The taking of the census will open the way to frauds of various kinds, against which people should be on their guard. Just as we close this page the information comes that one chap—or concern—has already begun operations, by opening

A CENSUS INFORMATION BUREAU,

and advertisements have been sent to papers all over the West, which read thus:

"Persons (regardless of politics) desiring situations as Enumerators of the forthcoming Census, can obtain all necessary information by addressing us. One or more, according to population, required in each township. Good salary to competent men. Address

CENSUS INFORMATION BUREAU,
No. — Street, Chicago, Ill.

Enclose 25 cents to insure answer and pay for stamps and blanks."

That is very neatly done; observe that nothing is promised—nothing is very definite about it except that 25 cents is to be sent, and thousands would be the greenhorns who sent, had not the Postmaster at Chicago the power to tell C. I. Bureau, Esq., that he can't have any letters at that shop.

An Unanswerable Letter is one that we have from a young man, who gives us an account of his life and present occupation, which he dislikes, and asks us to tell him what business he had better undertake, and moreover wishes us to find him a situation. We have many times before had requests to find the writers situations, but we think that this is the first time we have been asked to decide upon the business one is fit for, and put him into it besides. With every disposition to aid such persons, it is simply impossible. We can't help thinking that if one does not know what he is fit for himself, he will never find that any one else can discover it.

Asbestos Liquid Paints.—Last spring we made a favorable mention of the Asbestos Liquid Paints, after two year's experience with them. Now, after another years' exposure to the weather, we can confirm that report—indeed, we can see no appreciable change during the year, the surface remaining as hard, and as free from "chalkiness" as before. The durability of the paints, as shown by our test, is well established. That they are easily applied, and "cover" well, is shown by their use on elevated rail roads, as the immense contracts for these roads would not have been made, unless these important points had been satisfactorily shown. The makers claim, and with good reason we think, that the covering quality of their paints is due to the fact that, after mixing them to produce the desired colors, they are again ground, and that this second grinding, brings the oil and pigments into more intimate combination, and gives an uniformity of consistence, not to be attained by mere mixing. The paints are furnished of any desired shade or tint, and in a condition to be applied at once, without any previous preparation.

Pleasant Subscriptions—Far off Friends.—Few outside of the business office have any idea of the wide range of circulation of the *American Agriculturist*. Here is an item or two: For years past the largest number of subscribers, in proportion to population, have come from Washington Territory, north of Oregon. Over 3,500 copies have gone by mail to subscribers in New Zealand, directly under us—that is, on the opposite side of the world. On Feb. 4th, a single letter called for 80 subscriptions for Barbadoes in the *West* Indies, while a single previous letter contained 79 subscriptions from Nyne Tal in the *East* Indies, a thousand miles or so northwest of Calcutta; and so in much the same way we might go round to every habitable part of the world.

Notes from Shaker Village, N. H.—The Shakers are such good farmers that we wish they would write oftener. We gather the following from a letter from the Family in New Hampshire. Bro. John Bradbury kept 29 hens the past year. He obtained from these 4,500 eggs, and raised 58 chickens, "He modestly says others in the poultry line may have done better"—we wonder who?....Henry C. Blinn writes that brother R. Woodward is rather proud of his stock, that he has a Jersey bull, 10 months old, that weighs 598 lbs., a Durham bull that, at 9 months, weighs 725 lbs., and a heifer of the same breed that weighs 615 lbs.—But the Shakers are noted for feeding every thing well, whether it runs on two or on four legs—is with or without feathers.

Oil Stones in N. Carolina.—In the article in Dec. last, describing the manner of making whet-stones, it was stated that *Novaculite*, as the mineral is called, is found, among other localities, in North Carolina. Mr. W. B. Phillips, Assistant in the Experiment Station at Chapel Hill, writes to say that the most noted locality of the mineral is about seven miles from that place. There are other localities in Person, Anson, and Montgomery Counties, but that at Chapel Hill is of superior quality. There has been no regular working of the quarry.

Leached Ashes.—Potash is the principal fertilizing constituent of ashes, and the one that is removed by leaching. The leached ashes contains about one-fifth the amount of Potash of the unleached, the Phosphoric Acid, Lime, Magnesia, etc., remaining about the same in both. A bushel of leached ashes contains not far from one pound of Potash, worth 4 cents, and about the same amount of Phosphoric Acid, worth 7 cents. Allowing something for the Lime, Magnesia, etc., leached ashes is worth in the neighborhood of 12 cents per bushel. If the unleached ashes contains 5 pounds of Potash per bushel, they will be worth not far from 30 cents. A hundred bushels of leached ashes per acre is a good application, and one that is lasting in its effects.

Mulching a Hedge.—"M. C.," Albion, Ill., has been told that mulching an Osage Orange Hedge with sawdust is preferable to cultivating it, and asks if straw will not answer for this use. Undoubtedly it would; so long as the material used as a mulch contains nothing injurious it makes little difference what it is, the operation of the mulch being wholly mechanical. Several years ago it was stated that in some of the western nurseries where sawdust was used for mulching, a fungus growth started in the sawdust, which, it is said, injured the young trees. If this is true, straw would be preferable to sawdust. Our correspondent asks if the straw should be partially rotted.—No; ordinary straw from the stack. In absence of straw, tan-bark, swale hay, sorghum begasse, leaves, chips, or whatever cheap material that will cover the ground and prevent evaporation will answer. He asks: "Should they be mulched when planted, or be cultivated one year?" Mulch at once.

The New York Horticultural Society holds its meetings on the first Tuesday of each month, at 2 o'clock P. M., at "Republican Hall," at the junction of Broadway and Sixth Avenue, a place easily reached by both elevated and surface railroads. There is always something interesting to be seen at these meetings, and sometimes the exhibition of flowers, plants, fruits, etc., is really very fine. The exhibitions are free to all, and not only our many city readers, but our friends from abroad who may visit the city at the beginning of any month, should bear these interesting meetings in mind.

Some Corn in Illinois.—The corn crop of the single State of Illinois for the year 1879 is reported to be **305,813,377** bushels, and estimated to be worth $97,483,052, or about 31¼ cents per bushel. It is difficult for the mind to take in the full magnitude of these figures. Here are some calculations that will help the conception: Load this corn upon wagons, 40 bushels to the load, and start them off on the road so near together that there shall be 100 teams in every mile. The line of wagons carrying this one crop of Illinois corn would stretch away 76,453 miles, or *more than three times around the world!*—Again: Load this crop upon railway freight cars, 285½ bushels or about 8 tons to the car, and make up these cars into a continuous freight train, allowing 30 feet of track to each car. The train would extend 6,080 miles, or nearly twice across the continent, from the Atlantic to the Pacific Oceans!—Again: Suppose we put this corn crop into a *square bin* 20 feet deep. Let the arithmetical young readers of the *American Agriculturist* reckon how large this bin would be each way. Also, how many acres it would cover.—Also, how many pounds of pork it would make if given to pigs weighing 100 lbs. each when they begin feeding upon the corn, and 250 lbs. when killed for pork.

Assorting Apples.—At this season of the year apples will be decaying to a greater or less extent, depending upon the variety, care in picking, handling, storing, etc. If kept in barrels, they may be turned out and the decayed ones removed, after which these that remain had best be spread upon shelves in thin layers, where they may be kept dry, and where the "specked" ones can be removed so soon as they are affected. In this way sound fruit may be had until late in the spring.

Bee Notes for March.

BY L. C. ROOT, MOHAWK, N. Y.

As spring approaches the risk of injury to the bees by any disturbance is much greater than earlier in the season; hence we should keep the bees entirely undisturbed, or as nearly so as possible. A recent writer has truthfully remarked that it may be said of some colonies that they were "disturbed to death." Over anxiety to examine into the condition of the bees, and to *do* something which might make them winter well, has brought failure to many an inexperienced bee-keeper.

QUESTIONS AND ANSWERS.

WOOD FOR HIVES.—A correspondent in Bridgeport, Conn., asks: "What kind of wood is best for hives and frames. Would pine answer?"....Pine is the very best lumber that we have ever used for this purpose, and we know of nothing better.

TRANSFERRING COMBS.—Another writes: "Please let me know how to fasten combs that are transferred from box-hives into frames."....The process of transferring is described in the Notes for May 1876, or if a more full and illustrated description be desired, he will find it in Quinby's "New Bee-keeping," where it is given in detail.

WINTERING BEES.—A correspondent at St. Johns, N. B., misunderstands our directions for wintering bees. If he will follow closely our instructions as given from time to time in these Notes, and especially those given in our new edition of Mr. Quinby's work on Bee-Keeping, he will find that we urge the necessity for keeping the room containing bees warm and free from moisture. His idea of putting a stove in the room with the bees is open to objections. The stove should always stand outside of the room to avoid disturbing the bees when building the fires. The pipe may be allowed to pass into the apartment if not too near the hives.

DO HONEY-BEES INJURE SOUND FRUIT?—This question is one that comes very frequently, and from all parts of the country. It now comes to us from New Jersey, though not in the form of a question, so much as an unqualified assertion, a most positive statement, that unquestionably honey-bees do destroy fruit. This gentleman says that all of his early peaches were destroyed, as were also two-thirds of his grapes, and that "first, last, and all the time" it was the work of honey-bees. The statement is a most positive one, and were it not that we have had extended experience in the matter, and made it a subject of particular study and investigation, should be disposed to hesitate somewhat in taking the part of the bees. That honey-bees are often a source of annoyance to fruit growers, is freely admitted, as it will be by every one who is well informed on the subject. That bees, in times of scarcity of honey, will eagerly take the juice of any punctured fruit, is also a well understood fact. Dealers in fruit and owners of cider mills are often much annoyed by bees. Whenever the skins of fruit, from the occurrence of hot weather after a rain, or from any other cause, become broken, the bees will at once suck the juices from the fruit. I have on my place a Creveling grape-vine, which stands near the corner of a building, in such a position as to be seriously affected by the wind; as a consequence, the fruit becomes broken, and the bees of course sip the juice from it as fast as it is exposed. I have never picked a perfect bunch of grapes from this vine, yet I have many other vines of the same variety, standing in ordinary position, which are entirely undisturbed by the bees, and yield fruit in abundance. The late M. Quinby was not only interested in bees, but also had much interest in fruit growing, having several hundred grape-vines of different varieties. He depended upon these for a good share of his income in seasons that gave a poor yield of honey. If bees were capable of puncturing fruit, it might reasonably be expected that during those seasons, if at all, when little honey could be collected, bees would be more than ever untiring in their efforts to puncture the fruit. Here was one earnestly endeavoring to find the truth in this matter. He was interested in both bees and fruit, and of course would investigate without prejudice. As a result of his investigations he repeatedly stated that he found the bees unable, *in a single instance*, to puncture sound fruit of any variety whatever. In 1869, while yet associated in business with Mr. Quinby, our yield of honey was an entire failure, while, on the other hand, our grape crop was particularly fine. At the very time that the fruit was ripening, the bees were actually dying of starvation. Yet at this season, when the bees should resort to the fruit if ever, and when the fruit was far more perfect than usual, and consequently more tempting, in this season, even a less proportion of it was disturbed by the bees than during ordinary seasons. We made our observations on this point with the closest care, yet we were unable to find a solitary instance in which the bees attacked or disturbed the sound fruit in any manner, yet there were hundreds of colonies within easy reach of the vineyard. There is one important thing to be remembered in this matter. Nature has assigned to the honey-bee certain work, and provided it with proper implements with which to execute it. The bee has no piercing and tearing jaws, or any other organ with which it can rupture the skin of a fruit. On the other hand it is a part of the occupation of hornets and wasps (or the majority of them), to build their nests from partly decayed wood, which must be torn from rails, boards, etc. These insects are provided with cutting jaws which are very strong, and of such a form that they can tear even the toughest fruit skins with ease. That careful observer, the Rev. L. L. Langstroth, investigated this matter many years ago, and in his work on "The Honey-Bee" is most emphatic in his assertion that bees are not the aggressors in the attacks upon fruit, and to confirm his statement gives engravings showing the jaws of both the Honey-Bee and Honey Hornet, magnified. These engravings

1.—HONEY BEE'S MOUTH. 2.—HORNET'S MOUTH.

are here reproduced. Figure 1 shows the blunt and unarmed mouth-parts of the honey-bee, and figure 2 the corresponding parts of the honey-hornet.

It is earnestly hoped that, before advising the destruction of bees in any neighborhood, our correspondent will first investigate more closely, and see if the fruit disturbed by the bees is not first injured by other causes. The views here given are not only the result of our own personal experience and observations, but are sustained by many other careful observers whose interests were enlisted on behalf of fruit as well as bees.

Queen Bees by Mail.—At the last meeting of the National Bee-Keepers' Association, Prof. A. J. Cook was appointed to induce, if possible, the Post-Office Department to rescind the order excluding queen bees from the U. S. mail. Prof. Cook has been successful, and hereafter the queens can be sent by mail—a very important item to many, especially those living at a considerable distance from an express office.

Pleuro-Pneumonia in Pennsylvania.—Under the provisions of the Act of Assembly passed last winter, Governor Hoyt placed the whole matter of dealing with Pleuro-Pneumonia in the hands of Sec'y Edge of the Board of Agriculture. Since the first of April, 110 animals have been killed; 31 herds containing 595 animals have been closely quarantined and regularly visited by Veterinary Surgeons; when any animal showed unmistakable symptoms of infection, it was at once appraised and killed. In addition to this, a large number of herds supposed by their owners to be infected, and so reported by them, have been examined, and all cattle imported from Europe have been placed in the hands of the State authorities for quarantine. Since April last, the cost of the work has not exceeded $2,750, of which $1,300.50 has been paid for animals appraised and killed. At present but 8 herds are in quarantine, and of these four are considered clear of the disease, but not beyond the danger of communicating it to other stock. All herds are kept in quarantine for three months after the termination of the last case of disease.

The Michigan Agricultural Society has just closed its accounts for the year, and with its receipts for 1879, at $52,447, disbursements $30,597, and a balance on hand of $21,850, the organization is on a firm financial foundation. The State Fair is set for September 13-16, but as yet the place of holding it is not designated.

(*Basket Items continued on page* 115.)

Science Applied to Farming—LV.

Field Experiments with Fertilizers.—What Farmers have been Doing.

That the intelligent American farmer may be a good observer, is a fact that has been impressed upon me more forcibly than ever by the reports sent me of Field Experiments with fertilizers last season. As will be remembered, the *American Agriculturist* has proposed, for two seasons past, some series of experiments, and arranged to provide the readers with samples of fertilizers for the purpose, of tested quality, and at prices just covering cost. Each article was put up in a small bag, containing enough for 1/10 or 1/20 acre, and numbered A. B. C., etc. Every bag had a label giving amounts and proportions of its ingredients. With each lot was sent a pamphlet, containing explanations and directions for the experiments, and blanks on which any who might care to take the needed trouble, were requested to note the results and forward them to me. The firms by whom the fertilizers were put up, supplied numerous sets to their customers; the Vermont Agricultural College distributed a number among the farmers of that State; the Maine Agricultural College did the same, and made several series of experiments on its own farm. Prominent farmers in various parts of the country joined in the enterprise, so that the trials were made from Canada to Florida, and from Maine to Kansas.

I may say that both the *American Agriculturist* and the dealers displayed a great deal of enthusiasm in the undertaking, doing this, as I happen to know, at pecuniary cost to themselves, and with no prospect of gain other than would come with the credit for encouraging the enterprise.

The Reports and their Value.

The blanks for reporting experiments were sheets, about 12 by 19 inches, having spaces for noting, on one side: (1) Description of soil; situation, kind, texture, dry or wet, depth of surface soil, character of subsoil, etc., etc.—(2) Previous treatment, manuring, and yield.—(3) Weather during experiment.—(4) Fertilizers and how applied.—(5) Method of sowing, planting, tillage, etc.—(6) Other details and remarks. The other side was devoted to details of size of plots, dates of planting and harvesting, amounts, quality, and value of produce in grain, roots, tubers, stalks, etc., by pounds and bushels; calculated profit and loss, etc. Nearly seventy of these reports are before me. Some are brief, most are well filled, and many entirely so, while several have additional interesting and suggestive statements covering a number of pages of foolscap, for which there was not room on the blanks.

From a detailed account prepared for the forthcoming Report of Conn. Board of Agriculture, I condense a few statements of plans and results.

Experiments for Testing Soils.

The principle upon which these experiments is based is briefly this: The chief office of fertilizers is to supply the plant-food that our crops need and soils fail to furnish. It is not good economy to pay high prices for materials which the soil may yield in abundance, but it is good economy to supply the lacking ones in the cheapest way. The most important ingredients of our common commercial fertilizers are *Phosphoric Acid*, *Nitrogen*, and *Potash*, because of both their scarcity in the soil and their high cost. It is in furnishing these that Guano, Phosphates, Bone Manures, Potash Salts, and most other commercial fertilizers, are chiefly useful. Experiments were suggested in which the three ingredients named were to be used, each by itself; two by two, and all three together.

To test the effects of these materials on different soils, was the special, and their actions with different crops the general purpose of these experiments. The ostensible object was to work upon farmers' soils; underneath this lay in my own thought a deeper purpose, to work upon their owners' minds.

Soils Chiefly Needing Phosphoric Acid.

In Mr. Bartholemew's corn experiment, No. 2, every plot which got Phosphoric Acid brought a good crop for the season: every one without it failed. The Nitrogen and Potash both increased the yield, but reckoning a bushel of corn with its stalks at 80 cts., neither increased it enough to pay the cost. This experiment was made on a field adjoining that of the experiment reported for 1877 and 1878, in which the crop rose and fell with the Phosphoric Acid, while it paid very little attention to the other ingredients. Indeed, in Mr. Bartholemew's experiments, which have now continued for three years, covered nearly one hundred plots, and are among the most instructive ever made in this country, the testimony in favor of Superphosphate, and against the other materials for corn is unanimous, but for potatoes, the complete fertilizer has proved profitable. And for corn, Superphosphate and farm manure together have brought the best results. A number of other experiments have equally striking results with Superphosphate. There are, however, many

Soils which respond well to Potash Salts.

In Mr. Sage's experiment, No. 24, for instance, no plot without Potash gave a profitable increase, and no one with it failed to do so. This tallies well with his experiments on other parts of his farm in 1877 and 1878, where the Potash Salts paid more than tenfold their cost. The mixture of Superphosphate and Potash Salt, F, which Mr. Sage estimates as costing no more applied than the simple hauling of stable manure to some of his fields, has uniformly brought from 60 to 70 bushels of shelled corn per acre.

The Complete Chemical Fertilizer.

No. G. has brought by far the best results. It was generally the most profitable of all with potatoes, and often so with corn and other crops. The chemical fertilizers have not only brought larger yields than the farm manures, but have also proved more certain, both in favorable seasons and in cold, wet, and drouth.

Cases in which None of the Fertilizers were Particularly Useful

are common; No. 7 is such a one. Indeed, these experiments illustrate very forcibly a fact which few farmers appreciate, namely; that there are a great many soils which will not pay for the use of artificial fertilizers, at least until they are better tilled, irrigated, drained, or otherwise improved. In short, the reports before me are full of illustrations of the important facts that:

1. Soils vary widely in their capacities for supplying crops with food, and consequently in their demands for fertilizers.

2. Some soils will give good returns for manuring; others, without previous amendment, by draining, irrigation, tillage, or use of lime marl, or otherwise, will not.

3. Farmers cannot afford to use commercial fertilizers at random, and it is time they understood the reason why.

4. The right materials in the right places, bring large profits. Artificial fertilizers rightly used, must prove among the most potent means for the restoration of our agriculture.

5. The only way to find what a soil wants, is to study it by careful observation and experiments.

6. Success in farming, as in other business, requires the use of brains. W. O. ATWATER.

Samples of Field Experiments with Fertilizers, 1879.

Exp't. No.	*Name.*	*Soil.*	*Previous Treatment.*	*Weather.*
1.	J. FLANAGAN, Phola, Kansas	Clay	Worn down by wheat and corn	Warm, drouth.
2.	W. I. BARTHOLEMEW, Putnam, Conn.	Dark loam, compact subsoil	Old meadow	Cold, wet.
6.	W. C. ATWOOD, Watertown, Conn.	Sandy loam, hardpan subsoil	Rye after buckwheat	Very favorable.
7.	J. M. MANNING, Taunton, Mass.	Sandy loam, sandy subsoil	Old meadow	Favorable.
24.	CHESTER SAGE, Middletown, Conn.	Gravelly loam, compact subsoil	Old meadow	Favorable.
27.	PROF. W. H. JORDAN, Orono, Maine.	Heavy clay, compact subsoil	Same experiment in 1878.	Cold, wet.
31.	CHAS. H. COLE, Lunenburg, Vt.	Loam	Oats after timothy and clover	Favorable.

NUMBER OF BAG.		0	A	B	C	D	E	F	G	H	I	00
KINDS AND AMOUNTS OF FERTILIZING MATERIALS APPLIED PER ACRE.		*No Manure.*	*Nitrate of Soda, 200 lbs.**	*Dissolved Bone Black, 300 lbs.*	*Muriate of Potash, 200 lbs.**	*Nitrate of Soda, 150 lbs. Dissolved Bone Black, 300 lbs.*	*Nitrate of Soda, 150 lbs. Muriate of Potash, 200 lbs.**	*Dis. Bone Black, 300 lbs. Muriate of Potash, 200 lbs.*	*Nitrate of Soda, 150 lbs. Dis. Bone Black, 300 lbs. Muriate of Potash, 200 lbs.**	*Plaster, 200 lbs.*	*Farm Manure.*	*No Manure.*
VALUABLE INGREDIENTS APPLIED PER ACRE.			*Nitrogen, 32 lbs.*	*Phos. Acid, 48 lbs.*	*Potash, 100 lbs.*	*Nitrogen, 24 lbs. Phos. Acid, 48 lbs.*	*Nitrogen, 24 lbs. Potash, 100 lbs.*	*Phos. Acid, 48 lbs. Potash, 100 lbs.*	*Nitrogen, 24 lbs. Phos. Acid, 48 lbs. Potash, 100 lbs.*	*Sulphuric Acid and Lime.*	*Complete Fertilizer. Variable.*	
COST PER ACRE †			$7.50	$5.25	$4.50	$10.88	$10.13	$9.75	$15.38	$0.80	var'ble	
YIELD PER ACRE		bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.
CORN.	Experiment No. 1	18.5	20.3	20.3	17.3	19.2	12.9	17.6	20.1	13.0		
	Experiment No. 2	7.7	7.4	36.5	7.7	41.4	7.1	42.0	45.7		36.0	8.5
	Experiment No. 6	8.0	14.7	23.8	29.4	38.7	33.2	40.2	80.2	10.6	90.5	
	Experiment No. 7	11.3	11.3	16.6	11.0	18.9	10.0	13.3	15.9	4.5	23.9	
	Experiment No. 24	42.0	49.2	46.0	59.0	41.1	58.0	63.4	60.8			44.8
Average of 26 Experiments in 1879		24.6	30.9	38.4	31.7	40.7	34.0	40.5	47.1	31.4	43.0	29.6
Average of 27 Experiments in 1878		24.6	30.4	33.5	33.3	39.1	39.6	42.9	48.6	28.9	45.9	34.4
POTATOES.	Experiment No. 27	37	49	38	73	47	59	111	129	35	116	
	Experiment No. 31	150	180	175	215	220	260	360	370	150	470	
Average of 9 Experiments in 1879		50.7	75.3	88.8	85.2	93.2	83.6	121.1	141.2	69.2	131.6	55.0
Average of 9 Experiments in 1878		100.0	108.0	123.4	129 6	143 2	106.0	153.4	177.3	106.0	132.9	91.5
AVERAGE OF EXPERIMENTS OF 1878 & 1879. ‡ CORN. 37 Experiments.	Average Produce	21.3	30.1	34.0	33.7	40.0	23.4	41.5	47.9	24.8	43.5	
	Average Increase		8.8	12.7	17.4	18.7	2.1	20.2	26.6	3.5	21.2	
POTATOES. 14 Experiments.	Average Produce	75.0	85.7	97.9	109.0	114.9	93.0	134.9	156.6	87.3	131.9	
	Average Increase		10.7	22.9	34.0	39.9	17.9	59.9	81.6	12.3	56.9	

* In Experiments 2 and 27, 150 lbs. † At market prices, plus $5.00 per ton for freight. ‡ Including only those in which farm manures were tested with the chemical fertilizers.

[EXPLANATION OF TABLE.—The above table will repay careful study. Thus, for example, in Experiment 2, the 150 lbs. per acre of Nitrate of Soda, costing $5.62½, brought no increase of corn: 300 lbs. of dissolved Bone-black (charred bones superphosphated) added nearly 29 bushels at a cost of $5.25; while the two together (D) added 33 bushels at a cost of $10.88, and 150 lbs. of Muriate of Potash with these making the "complete" chemical fertilizer (G), increased the yield by 38 bushels, at a cost of $15.38..... In Experiment 6 this last mixture increased the yield by 72 bushels. While this complete fertilizer was so profitable in No. 6, and the Superphosphate in No. 2, in No. 24 the Muriate of Potash (C) paid best, bringing about the same increase alone as with the other materials. In Nos. 1 and 7, all the fertilizers were failures; in No. 1 apparently because of drouth; in No. 7 for some unexplained reason. Taking the average of the experiments for 1878 and 1879, the "complete" chemical fertilizer brought the largest crops of both corn and potatoes, excelling the farm manures. The mixture of Superphosphate and Potash Salts brought nearly as large yields of corn and larger of potatoes than the farm manures. As to average profit, among the chemical fertilizers the complete fertilizer (G) paid best for potatoes, and the mixture of Superphosphate and Potash Salts (F) for corn.

Fencing and Fences.

Wooden Fences.

A large number of descriptions, drawings, etc., of wooden fences have recently come to hand. Some of them are interesting, and we shall keep them for further reference and some of them for use in this Journal. Just now we are giving special attention to the subject of *metal* fencing.

About Patents on Fences.

A multitude of inquiries, too numerous to answer individually, come to us from all over the country, some describing well, and some unintelligently, various devices, and asking our opinion if they are "patentable" or worth patenting. In most cases it would require careful, thorough examination at the Washington Patent Office to answer these questions, and we can not undertake such work.

An Important Change of Circumstances—A Great Rise in Price of Iron and Steel.

Since this series of articles on Metal Fences was planned during our summer trip through the West, there has been a very rapid and great advance in the price of Iron and Steel. In September, 1878, the Standard No. 1 Anthracite pig iron was selling at $16@$17 per ton, and in September last it had only risen to $22@$23—that is, to a trifle over one cent per pound. The last week in January it sold as high as $43 per ton, and to-day (Feb. 6) is quoted at $40@$41—an advance of fully 90 per cent, or nearly double since last September 1. This has resulted from the great demand arising from the wonderful revival of business that took place as soon as our large crops were secured and the generally poor condition of crops throughout Europe became fully ascertained. This demand enables iron producers to charge their own prices, and they are realizing enormous profits. Such a state of things may continue for a moderate period, but when all the idle furnaces are in operation, and the new ones projected are in full blast, prices will be likely to fall back to figures affording only a fair profit. As a very large part of the cost of iron and steel fence materials depends upon labor, patent royalties, etc., the actual cost of metal fencing has not advanced correspondingly, and will not do so. Yet this rise materially affects, for the time being, the progress towards securing *Iron* Fence *Posts* that can successfully compete with wood for ordinary farm use. But even at the present value of iron, there are, or soon will be found, *iron* posts which will be more economical than to use wood posts at a nominal price.

Iron and Wood Posts Compared.

Suppose we take the present cost of Iron posts at 50 cents each. Several are now offered at this rate and under. The tables last month (page 51) estimated 100 rods of Post and Board Fence at $100; and of wire fence with wooden posts at $67.25. Taking similar figures we have

FOR 100 RODS OF FENCES:
(*Galvanized Steel Wire or Strap, 4 Strands High.*)

WOOD POSTS.		IRON POSTS.	
400 Rods Wire, at 11c....	$44.00	400 Rods Wire, at 11c....	$44.00
100 *Wood* Posts, at 12½c.	12.50	100 *Iron* Posts, at 50c....	50.00
400 Staples.....	.75	Labor about.....	7.50
Labor about.....	15.00	Total.....	$101.50
Total.....	$72.25		

Two men with a single horse and wagon should distribute the material, *drive* the iron posts and put up 100 rods of wire in two days, at a cost of $7.50. This gives a cost for iron posts over wood of 30 cents per rod (less than 2 cents per foot). But for the increased outlay to start with, we have a *permanent* fence, one occupying the smallest possible amount of ground, one scarcely needing any repairs for half a century, and one indestructible by fire. We are quite sanguine however, that with the present interest and the great activity of inventive minds, we shall very soon learn of some form of iron post that will be both effective and cheap, at a cost considerably below 50 cents each.

Non-Destructible, Non-Combustible Wooden Posts.

We are glad to learn that hopeful experiments are now being made towards producing a wood fence post that shall be both non-combustible by any ordinary fire, and practically non-destructible by the weather or ordinary decay, and at an increased expense of only a few cents per post. The information is private and confidential as yet, and we can not judge as to the probable success, but we do not see why, with the Kyanizing process long successfully practised, and with the new application of asbestos there should not be valuable results in the direction indicated. Perhaps by applying such improvements to the cheaper, more abundant varieties of wood, we may get such prepared posts at about the present cost of those made from cedar, chestnut, and like comparatively durable timber.

Other Forms of Posts.

A very large number of suggestions have recently come to us in the way of new forms, or supposed new forms, of iron posts. Some of these are covered by those already before the public; more are impracticable on account of their expensiveness; some are not clearly described; a majority, while sending queries, insist upon their ideas being considered private and confidential until they have further developed them or obtained patents....In figures 22, 23, 24, 25, are suggestions of our own, somewhat in the line of figure 11 (Jan. No., page 10)—and we offer these only as suggestive. The above-ground post (fig. 26) is to be a simple flat bar of wrought iron, say 1½ inch wide, ¼ inch thick—or of whatever size may be required for the particular fence to be put up: to be notched or pierced for attaching the horizontal lines; to be 4 to 4½ feet above ground, and

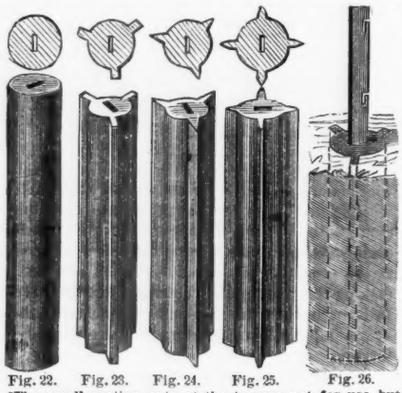


Fig. 22. Fig. 23. Fig. 24. Fig. 25. Fig. 26.

[These small section cuts at the top are not for use, but merely to show the form more plainly.]

extend down as deeply as may be needed by the firmness of the soil, the kind of foot-piece used, the nearness of the posts together and the consequent strain upon each. The ground, or FOOT-PIECE, to be made of clay and burned the same as brick, or it may be made of hydraulic lime and sand.—Figure **22** is a simple round tough brick, say 4 to 5 inches in diameter, and 15 to 20 or more inches long, with an opening in the center to receive the iron bar. A little thin hydraulic grouting will hold it firmly in. If burned to vitrification it will be as tough as iron, and absolutely indestructible. A post auger will quickly make an excavation for its reception in ordinary soil.—A Foot-piece 4 inches in diameter and 19 inches long would require the same clay as three ordinary brick of 8x4x2½ inches dimensions.—A piece 5 inches in diameter and 20½ inches long would equal four ordinary brick in contents.—To save weight and clay, this piece may be made as in figure **23**, the core only so thick as needed, with three flanges projecting an inch or so; or better still like figure 24, with wedge-shaped flanges, as in this form the piece could be driven with a wooden mallet into a hole made to fit the round central core.—Figure **25** shows the same with *four* flanges.—Figure **26** shows the post set with the iron bar.

A Primitive Cast-Iron Post.

Henry Gaylord, of Cheshire, Conn., sends us a description of a very simple iron post, made by Sterling Bradley of that town many years ago. These were merely flat cast-iron pieces, three-fourths of an inch thick or so, three to four inches wide. Holes were dug of any desired depth and width, the posts set in, the holes filled with small cobble stone, and grouting (thin hydraulic mortar) poured in. Boards were used for the running pieces, wire not having come into use. These posts, after standing 20 to 25 years, still remain firm. We give the above as suggestive only. Where small stones abound and hydraulic lime and sand are readily obtained cheaply, it may sometimes be practicable to use a small single bar of wrought or cast-iron of the strength needed, and fasten it firmly in the ground by putting around its base the necessary amount of grouting mixed with small stone or gravel. Notches or holes in the bars will serve for attaching the running wires. For general fencing, posts are required that can be quickly *driven*.

Fig. 27 shows a form of iron post manufactured in Pennsylvania, by Phillip S. Justice. It consists of an upright post of wrought iron, one-and-a-half inch wide, and five-sixteenths of an inch thick; 6 feet long, and notched and pierced with small holes for attaching the running wires. This is driven into the ground, say 20 inches. An angular looped collar is slipped down to the surface of the ground, and two shorter pieces of iron 1½ inch wide, one-fourth inch thick, and about two feet long, are driven through the collar-piece, as shown in the engraving, to form braces. This appears like a somewhat effective post—perhaps too expensive for general farm fencing at the present advanced cost of iron. The weight of the whole is about 14½ lbs.

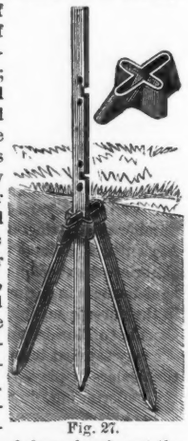


Fig. 27.

An Important Point in Favor of Wire Fences

is referred to by several of our readers, which, summarized in nearly the language of one of them, runs thus: "I raise winter grain mainly, and my fields are subject to snow-drifts. Formerly I usually lost a pretty wide strip of wheat along the wooden fences, owing to the heavy snow-drifts remaining so long on a strip two to five rods wide on at least two sides of the field. I have now four ten-acre fields fenced with barbed wire and small cedar posts. These do not check the wind so as to produce snow-drifts, and I save wheat enough to pay the cost of the wire in every two or three crops, while the fence will outlast half a dozen rail fences, I think. Two of these fields adjoin pasture fields, and on the sides next these pastures I have spiked slim long poles upon the posts about 3 feet from the ground. While these do not stop the snow, they warn off the animals, and so far I have had no accidents."

Another correspondent writes that his fruit trees were often girdled by mice that found good winter quarters in the snow-drifts along his old wooden fences. Two years ago last summer he substituted wire fences, partly barbed and partly plain wire, and has had no snow-drifts and no trouble from mice, by taking the precaution to remove or trample hard any considerable bodies of snow that gathered around the trees; and further, that since the removal of the wood fences the mice have had no breeding places, and they have mainly disappeared, so that this winter he will not take any trouble with the snow around the trees.

Specific Loss and Gain.

A Subscriber in Central New York, states figures thus: "In autumn of 1878, I sowed winter wheat in a field with a high rail fence on one side, 70 rods long. The snow-drift killed a strip full 4 rods wide, or 280 rods—just 1¾ acre. The rest of the field averaged 24 bushels per acre, and I sold my wheat at $1.45 per bushel. The 42 bushels lost by the snow, were worth $60.90. Here was a loss on one crop of enough to have built a new wire fence, with iron posts, along the whole 70 rods—a fence that would be permanent for a life-time, and need no repairs." ....Another writes from Wisconsin: "I have fields fenced with wood, and others with wire. My observation is, that the latter can on the average be worked at least a week earlier in spring; the former

is wet and cold on the borders, long after the rest, owing to the snow which has been caused to lie in drifts by the wood fence. The wire fence does not produce perceptible snow-drifts."....

Injury from Barbed Wire.

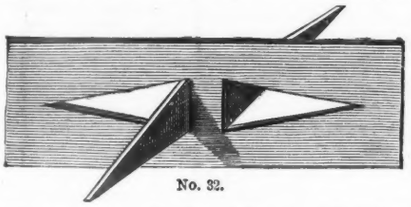
In our closing remarks last month (page 52), we said: "None of the long, sharp-pointed barbs having perpendicular sides, or those nearly so, and none of those inclined in any direction to act partially as hooks, are adapted for use along highways or where clothing will be likely to come in contact with them. None of the above barbs are adapted to small inclosures, or where *valuable* animals are in danger of contact with the long, sharp points of any form. Though they may be so shortened as to remove danger of fatal injury, disfiguring sores and scars will be produced. Something in the form of the 'Brinkerhoff Improved,' with sides so inclined as to prevent catching and tearing, and so short as not to produce deep incisions when struck squarely, will need to be provided."....We repeat this with emphasis, and say further, that while the strongly-barbed wires may probably be advantageously used for the large pastures of the West and South-west, we do not advise their use generally where farms are divided into smaller fields and where valuable animals are kept. For all such locations, strong wires, or straps—perhaps with barbs so blunt as to be incapable of cutting or tearing the skins of horses and cattle, or of tearing the wool from sheep—will come into use. We have received many communications, some detailing injuries, and others approving the barbs, of which the following two are given as average samples:

Mr. R. C. McWilliams, an old subscriber of the *American Agriculturist* in Northumberland Co., Pa., personally gives us items from his experience with barbed wire fence. He has not discarded its use, and does not absolutely condemn it; hopes the embankment described last month (page 52), or some other device, will render it less dangerous. He had a valuable cow that had one leg cut down to the bone, "nearly half off," and the flesh badly torn by the fence barbs. She was a long time in a dangerous condition. A $200 horse had both legs cut, and a wound on the side. He had paid $18 for a Veterinary Surgeon's attendance, had the horse laid up 3 months, and it was not well yet. He thought the present value of the horse might be $50 for ordinary work when fully recovered, though he could only get an offer of $30. His father-in-law, Dr. Jacob Reigard, of Ogle Co., Ill., has a half mile of barbed fence, and though not entirely satisfied with it, does not condemn it.

H. L. Raven, of Travis Co., Texas, writes us: ".... As to the injury to live stock, which seems to be the great objection to barbed wire here, my own experience is that the danger is not of great extent. I have had no serious accidents. Only one horse has scratched itself, though I have put into the pasture horses that had never seen a wire fence. But it is best to be careful and not crowd animals towards these barbed wires until they learn where they are. Barbed wire will be a great boon to Texas, enabling us to put into cultivation large tracts of land that would have lain idle without it...."

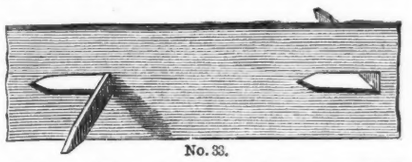
Further Forms of Barbed Fences.

Partly as a matter of curiosity, and especially to stimulate further thought and invention, we pre-

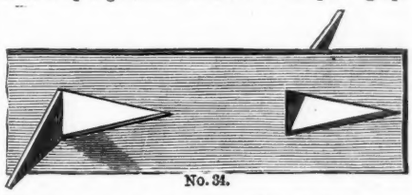


No. 32.

sent in numbers 32, 33, and 34, the independent suggestions of three of our readers, living remote from each other, in different States: **No 32,** is engraved from a pattern sent us by H. H. Hagerman, of West Windsor, Ohio. Two barbs are formed by puncturing out central portions from steel straps, every five inches, and bending these portions at right angles to the strap on alternate sides, as shown in the engraving.—**No. 33,** comes from a reader in St. Paul, Neb., who withholds his name. It differs from No. 32 only in the *form* and size of the barb, which in the pattern is less than an eighth of an inch wide, and not quite half an inch long. They are 2 inches apart, turned out on opposite sides, and the strap twisted when put up. Our correspondent refers us to Purdum & Reed, of Chillicothe, O., for further particulars.—**No. 34** is from a pattern sent us by Geo. N. Hodgdon, Nashua, N. H. This is similar to No. 32 in the *form* of the barb, but the barbs are cut singly every 2 inches, instead of in pairs every 5 inches. The steel strap is galvanized and twisted in putting up.

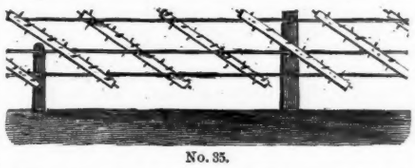


No. 33.



No. 34.

While all three of the above (Nos. 32, 33, 34), are open to the objection of having cutting barbs, the strength of the strap is lessened somewhat in No. 33, and largely so in 32 and 34—fully one-third—and the strap would need to be fifty per cent wider to secure the same strength. The "Brinkerhoff Improved" (No. 19), retains the full tensile strength



No. 35.

of the strap, requires only a small amount of metal for the added barbs, and these can be made so blunt as not to cut or tear.—The prominent advantage of the strap over the twisted wire is that the former is more conspicuous—more readily seen by animals approaching it. Several other forms of barbs, used on wire, can be much modified in length and sharpness without destroying their efficiency.

No. 35.—"King's Thorn-Stay Fence" is one of the varieties of barbed fence we have not before exhibited. It is the ordinary plain wire fence of three strands of No. 9 wire, to which are fastened, with staples, a series of inch square wooden strips, or "stays," set inclined as shown in the engraving, and placed alternately on both sides of the horizontal wires. The staples pass through the stays, and are clinched on the side opposite the wire. The wooden stays are also supplied with pointed barbs. It is claimed that these wooden pieces render the fence visible, support the wires, preventing their being spread apart by animals attempting to crowd through, and that the barbs thus placed are less liable to be seriously injurious. Before the recent rise, these stays were supplied at $2.50 per 100. Their expense will of course depend upon the distance apart they are placed. Aside from any advantage or disadvantage of the barbs, such strips or stays, if thoroughly protected from decay, and without or with barbs, could be applied along plain wire fences already built, and be placed a few inches or a few feet apart, as desired. These stays are made in Iowa by the Baker Manufacturing Company.

The White Pine Weevil.—A few insects are of benefit to the plants upon which they feed. Mr. A. S. Fuller, one of the editors of the "American Entomologist," cites the White Pine Weevil (*Pissodes Strobi*), as an insect of undoubted use to the trees upon which it makes its home. The grub of the weevil perforates and kills the leading shoots of young pines and spruces, thus checking the upward growth of the main stem, when the branches below bend inward, and grow more vigorously, thus causing the tree to assume a better shape than it would otherwise—a sort of natural pruning which such trees often need but seldom get. Mr. Fuller says: "Since the advent of the Pine Weevil on my place many of the Norway Spruces have been greatly improved in their appearance by the almost annual destruction of the terminal or leading shoots, and no one would question the benefit of this kind of pruning after a glance at the trees, comparing the weevil-pruned with those that have escaped. I have only to regret that these insects do not visit every specimen on my grounds, for it is no easy task to get at the leading shoot of a Norway Spruce 30 or more feet high, and take it out with a knife or shears." When the trees are young, as those in nursery rows, the insect may do some damage.

Simple Plumbing for a Kitchen.

The engraving herewith illustrates a practical method of plumbing for country houses. It is quite free from complications, and the several parts may be obtained ready fitted, so that with pipe-tong and a screw-driver, any mechanic should be able to connect and set up the whole in working order. The cost is small. For the house on the next page it is estimated at $40; but may be considerably lessened. The annual interest and depreciation would not be over $5, while the saving of the house-keeper's strength would be many times that sum. *A* is a "ship pump," fastened to the kitchen floor, and afterwards enclosed by the wood-work fronting the space beneath the sink, so that when finished no part is in sight except the handle, which extends upward, and is worked with a lateral motion through a slot made in the drain-board. Other forms of force-pumps may be selected.—*B, B, B*, 1-inch supply pipes leading from a cistern to the pump, and thence ¾-inch pipe to the tank. *C* is a branch from the supply pipe leading to a point 10 inches above the sink, where a faucet is attached to regulate the flow of water as required. The tank, *D*, having capacity for 3 hogsheads of water, is placed in second story immediately above the pump. It is of plank, firmly made, and lined with sheet lead. *E*, iron sink, 16 by 24 inches. *F*, waste pipe (1½-inch with trap) leading from sink to a drain outside. A hogshead might take the place

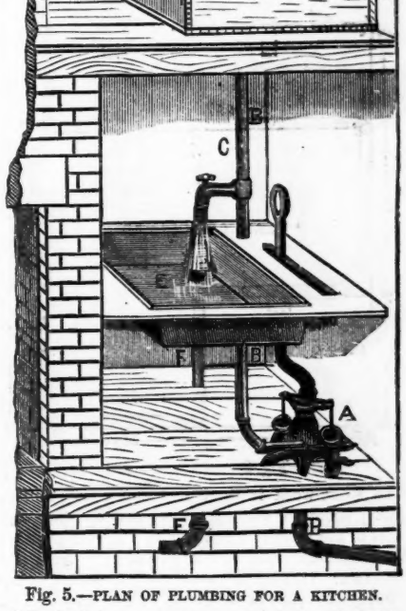


Fig. 5.—PLAN OF PLUMBING FOR A KITCHEN.

of the tank to save expenses, but is less desirable. The above very simple, easily constructed and inex-

pensive plumbing arrangement should be included in the fittings of every kitchen, as one of the most valuable and sure helps possible to obtain for its cost. A few moments spent in filling the tank as needed, by some hand employed on the place, will give abundant supply of water for all ordinary uses, and greatly lessen the labor of house-work. An opening may be made through the kitchen ceiling below the tank, which will allow sufficient heat to pass up to protect the tank water from freezing in severe weather.

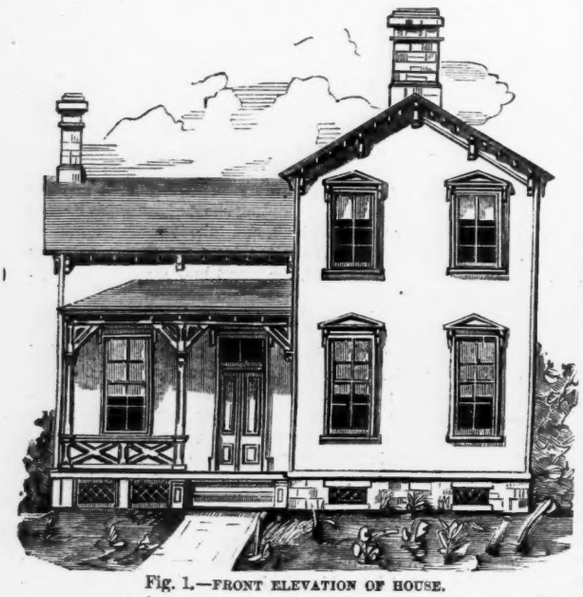


Fig. 1.—FRONT ELEVATION OF HOUSE.

A Farm House Costing $1,200.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan is partially based upon a sketch of a Wisconsin Farm House at which Mr. Judd stopped during his recent Western travels. It is suitable to most places in this latitude, and may properly front the north, east, south, or west. The interior is adapted to the wants of an average sized family. As is usual in this class of buildings, all halls, and expensive stairways are omitted, the entire space being devoted to the uses and convenience of the family....**Elevation** (fig. 1).—The general outlines and style are such as predominate on the buildings of thrifty farmers everywhere, and are suggestive of comfort and modest pretentions.

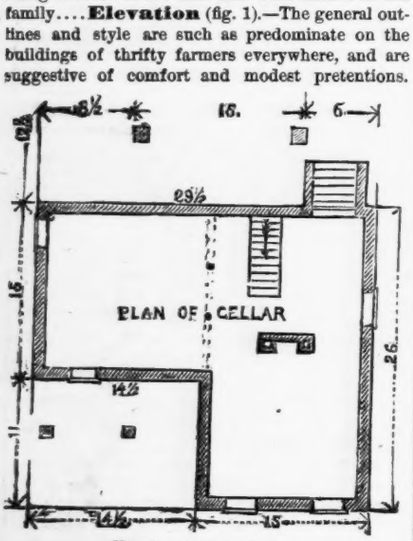


Fig. 2.—THE CELLAR.

The wood-work is set 2 feet above the grading, giving room for cellar windows and insuring dryness of the interior. A Veranda is always pleasant and useful to protect the front entrance from sun and rain. If desired, a vestibule can be had by enclosing the space as shown by dotted lines (fig. 3), and a door could open from it directly to the parlor.

The details of exterior finish are very simple, and arranged for good proportion....**Cellar** (fig. 2).—Hight in clear, 6 feet 2 inches. It is lighted by five small windows, has an outside entrance from the rear, and stairs leading to the work-room of the first story....**First Story** (fig. 3).—Hight of ceilings, 9 feet. There are four good sized rooms, three closets, and the necessary stairways. The Parlor is square, has two front windows, and may have a side window at the right. It has an open fire-place and a mantel. The Kitchen is also square, has windows outlooking on three sides; an open fire-place suitable for a range; two closets, and a sink and pump. The Work-room communicates directly with the kitchen and with the cellar under the main stairway, and has an outside door opening to the rear stoop. Some use this room as a kitchen and the other as a dining and family room. In such case the sink and pump may be placed at *A*, and a stove at *B*, with smoke-pipe connecting with the chimney flue from the second floor. The Bed-room is convenient to either parlor or living-room, and has two windows and a closet. The Stairs, both up and down, are arranged to occupy little room, and have doors to each....**Second Story** (fig. 4).—Hight of ceilings in the main part 8 feet, in the side wing 3 to 6½ feet. They may be carried higher if desired at small additional expense. There are two chambers, two closets, and a passage in the main part; two bed-rooms in the side wing, and a garret in the rear wing, all opening from the stair landing. The Chambers have side walls full hight to the ceiling, the Bed-rooms are "half-story" finished. The Garret is floored, and has a small window in the rear, but is otherwise unfinished, being intended as a place for general storage.....**Construction.**—The excavations for the Cellar are 4 feet deep. The Foundation and Chimneys are of brick-work. Frame of sawed timber; Siding of "Novelty pattern," which is preferable, but may be of other form of boards. Principal roofs of shingles; Veranda and Porch Roofs of tin. Floors of 8-inch spruce, tongued-and-grooved. Windows in cellar have three-light sash hung with butts. Other windows have eight-light sash hung to weights. All doors are four-panneled. Casings for the first story are 5-inch moulded; for second story, 5-inch plain; Base to match casings. Plastering of both stories, two full coats and white finished. Painting, two coats of best materials. A pump, sink, and tank are provided, connected with suitable pipes, figure 5. (See article on the preceding page.)

In the following estimate many items may be reduced in some localities, as, for example, the foundations may be of stone, where easily obtained; and where lime and sand are cheap the plastering would be much less....**Estimate:**—Cost of materials and labor:

57 yards excavation, at 25c. per yard	$ 14 25
12,000 Brick (furnished and laid), at $12 per M.	144 00
30 feet stone steps, at 12c. per foot	3 60
475 yards Plastering, at 25c. per yard	118 75
2,800 feet Timber (as follows), at $15 per M.	42 00
2 Sills 4x8 in., 26 ft. long. 5 Posts 4x7 in., 19 ft. long.	
6 Sills 4x8 in., 15 ft. long. 2 Posts 4x6 in., 13 ft. long.	
2 Sills 4x8 in., 13 ft. long. 2 Plates 4x6 in., 26 ft. long.	
2 Ties 4x6 in., 26 ft. long. 3 Plates 4x6 in., 15 ft. long.	
3 Ties 4x6 in., 15 ft. long. 2 Plates 4x6 in., 13 ft. long.	
1 Veranda 3x7 in., 56 ft. l'ng. 40 Beams 3x8 in., 15 ft. l'ng. 14 Beams 3x7 in., 13 ft. l'ng.	
100 Joist, 3x4x13, at 15c. each	15 00
200 Wall Strips, 2x4x13, at 11c. each	22 00
230 Novelty Siding Boards, at 28c. each	64 40
Cornice materials	20 00
300 Shingling Lath, at 6c. each	18 00
35 bunches Shingles, at $1.25 per bunch	43 75
150 Flooring Plank, at 28c. each	42 00
2 Stairs (complete)	15 00
5 Cellar Windows (complete), at $3 each	15 00
16 Main Windows (complete), at $7 each	112 00
19 Doors (complete), at $6 each	114 00
3 Mantels and Shelves (complete), at $2 each	6 00
5 Closet Shelving (complete), at $2 each	10 00
Verandah and Stoop (complete)	30 00
Pump, $10; Tank, $15; Pipes, $8; Sink, $2; Setting, $5	40 00
Carpenter's Labor not included above	150 00
Painting, $120; Carting, $15; Incidentals, $25.25	160 25
Total cost, complete	$1,200 00

Materials for Compost.

The compost heap is always a timely topic, and the heap itself should be kept going from the beginning to the end of the year. Only put the right materials into the mass and it will make money for us while we sleep. There is generally time for the gathering of these materials before the spring work is pressing. Acres of rich material lie in every forest, the decaying leaves and fallen branches of many generations, often within easy reach of the barn, or of the field that is to be cultivated the next season. This mass of leaves and leaf-mould is rich in potash and phosphates, and is just what long cultivated fields and gardens need to increase their fertility. With a little calculation, muck, peat, or headlands can always be made available for the compost heap. This bank will never fail to give dividends. Any decaying vegetable matter—old straw, bog hay, corn stalks, saw dust, chip manure—may safely be put into the compost heap. Any animal matter in sufficient quantity will start fermentation in the heap and add to its value. If other articles fail, fresh manure from the stable and yard or sty, is always available upon the farm for this purpose. On most farms there are other occasional resources in dead animals, that should not be overlooked. The market town and village should be made to contribute to the compost heap. Wood ashes are sometimes available, the factory has woollen wastes, the grocer spoiled fish and meats and old brine, the builder slacked lime, and even the gas company gas lime. Slaughter-house refuse is rich in blood and animal matter, which is very valuable. The team that carries a load to market, in the absence of a paying load home, should bring back something for the compost heap.

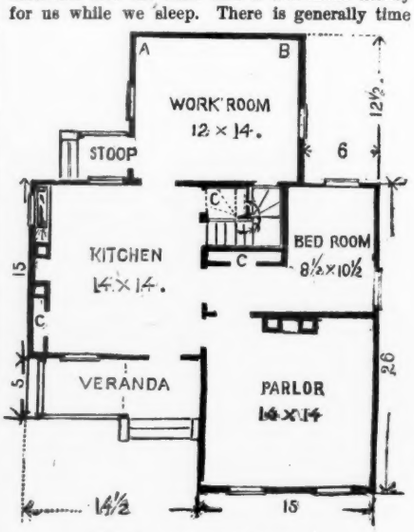


Fig. 3.—THE FIRST STORY.

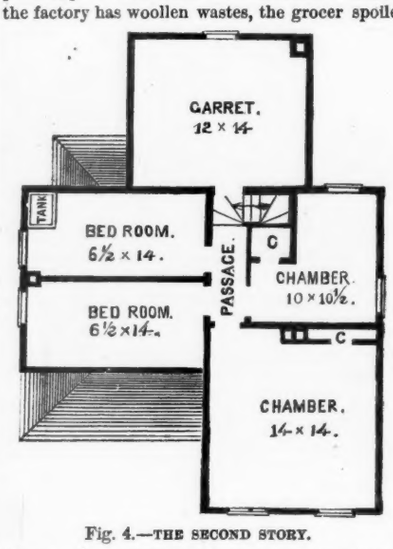


Fig. 4.—THE SECOND STORY.

Swiss Dairying.—The Simmenthal Cow.

Switzerland is essentially a dairy country. The grass grows greener upon the sides of the Swiss mountains, and in the elevated valleys than elsewhere, not excepting even the noted meadows and pastures of Ireland; the "Emerald isle," so-called from its luxuriant verdure. These verdant pastures have helped to produce some of the best Shorthorns, as those of Switzerland have produced the Swiss cows, probably the most prolific of milk and butter of any race of dairy animals. Pastures make cows; time and breeding of course being indispensable elements in the process, but no length of time or system of breeding can build up a race of excellent dairy cows without the feeding. The Swiss grass lands are favored with special advantages. The winter's frosts loosen from the granite rocks the most important elements of fertility, of which potash is the chief one, and the spring thaws and summer rains wash these down the hillsides and over the valleys and supply perennial sources of mineral food to the grass. Nowhere else is this natural process of fertilizing going on continually on a grander scale than in that country, where mountain side and sheltered valley alternate with surprising frequency. The rich verdure; the pure air and water; the freedom from restraint; the gentle and familiar tending; in short, the perfect adaptation of condition and circumstance to the development and comfort of the Swiss cow is such that it is noticed as a general thing that these animals, when taken from their homes, suffer from a sort of "home-sickness"; they lose their contented disposition, they seem to fret, and rarely fail to depreciate in excellence during their enforced banishment. It is only when their progeny become acclimated and used to the new circumstances, that the race recovers its historic value and meets the expectations of its new owners. This fact, which is too frequently observed to be doubted, has led to the opinion among Swiss dairymen that the exportation of their cattle should not be encouraged, and among the French dairymen that importations of these mountain cattle do not turn out so satisfactory at first as might be expected. It may be that a sort of sentimental patriotic feeling so general among the Swiss, may have given birth to this idea of "home-sickness," when in reality it is not so much in the sensitiveness of the *morale* of the cow as in her digestive organs, not so richly supplied, that her failure has its origin. Perhaps, too, the inventive minds of the Swiss people, to which the far-famed legend of William Tell, with all its amplifications, is due, in their absorbing love of their own land, may have imagined that their cows can as hardly leave their pastures and herders, as they themselves could leave their homes; and only with equally regretful memories. But, however, the fact remains, that pastures and cows being perfectly adapted to each other, the Swiss cows in their native homes are perfect dairy animals. And this is true with all the varieties of this race, of which there are several. The *Simmenthal*, the subject of the portraits here given, is to other Swiss cows, what the Jersey is among our dairy cows. An average product of a Swiss cow is 2,700 quarts in the year, a comparatively low yield, but the milk is exceptionally rich in cream. The best cows give 28 to 32 quarts per day when fresh, and an average of 18 quarts through the pasturing season, is far from rare. The Simmenthal cow, as seen by the portrait given, is essentially a dairy cow. The gentle expression and the quiet attitude produce a favorable impression at first sight. Having an excellent reputation, it is frequently the case, that other cows of mixed breed, similar in color, are passed off as of this variety, and this may be taken as one proof of its excellence. The color of this breed is red, pale-red, or red and white; the whole appearance is pleasing, and the figure of the bull is that of a true dairy animal. The breed possesses large milking capacity, and cows that produce 34 quarts daily of very rich milk, are said to be by no means unusual. But it is a common failing for the breeders of a race of cows, to strain a point in favor of their own kind of stock, and it is remarked by a well known Swiss writer, that as the question of profit is closely connected with the reputation of a race of cattle, attempts are sometimes made to obtain a high character for one breed, at the expense of others, with a view to attract purchasers; a remark which may be justly applicable to others than these simple mountaineers. The same writer also hints strongly of "intestine quarrels;" "interested eulogies;" and "accusing controversies;" all of which might well be supposed to apply to other advocates of different kinds of dairy cattle than the Swiss, who are as yet unable to agree among themselves, as to which of their various breeds produces the best dairy cows. Our American breeders find themselves in a similar predicament. The Swiss cows, more especially the variety known as the Simmenthal, have been fed and bred for the production of rich milk. It is an accepted belief among Swiss breeders, and dairymen, that feed is a very important element in the production of butter. The faculty of converting certain elementary substance into butter is organic, depending on the structure, and constitutional functions of the cow, and being independent, up to a certain point, of the nutriment. Of two cows fed alike, one may give richer milk than the other. It is curious that this evident, and practically known fact, should be disputed by some persons, (not Swiss), who are taken to be experts on dairy matters. But facts show it to be true in spite of theories and opinions; and our readers, who guide themselves by any other principle than this, will surely discover that they are misled. Swiss cows, by reason of their excellence, have been largely exported. The spread of the manufacture of Gruyère cheese—for which rich milk is necessary—into those districts of France and Germany, which border on Switzerland, has made it necessary to import with the industry, the means to make it successful, and where this cheese is made, the Swiss cows, and Swiss dairymen, have been introduced. The race has taken a permanent foothold in America, and several herds of the most excellent quality are now in course of formation in parts of New England. For the photographs, from which the accompanying portraits are reproduced, we are indebted to one of our Swiss subscribers, Mr. Im Obersteg, of Oberwyl. The cattle were bred by Mr. Rebman, in Erlenbach. The bull is 3 years, the cow 5 years old. Both were sold to a Russian.

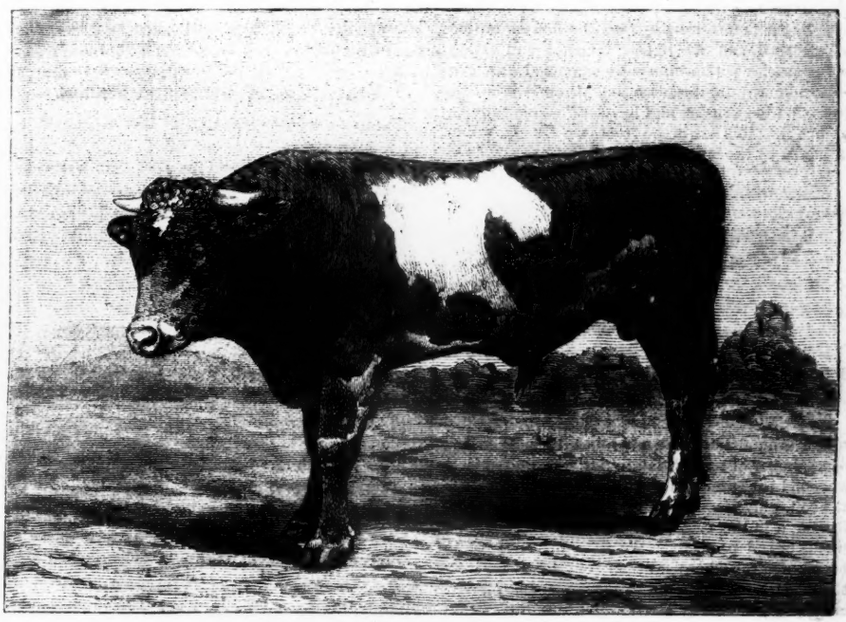


Fig. 1.—A SIMMENTHAL (SWISS) BULL.

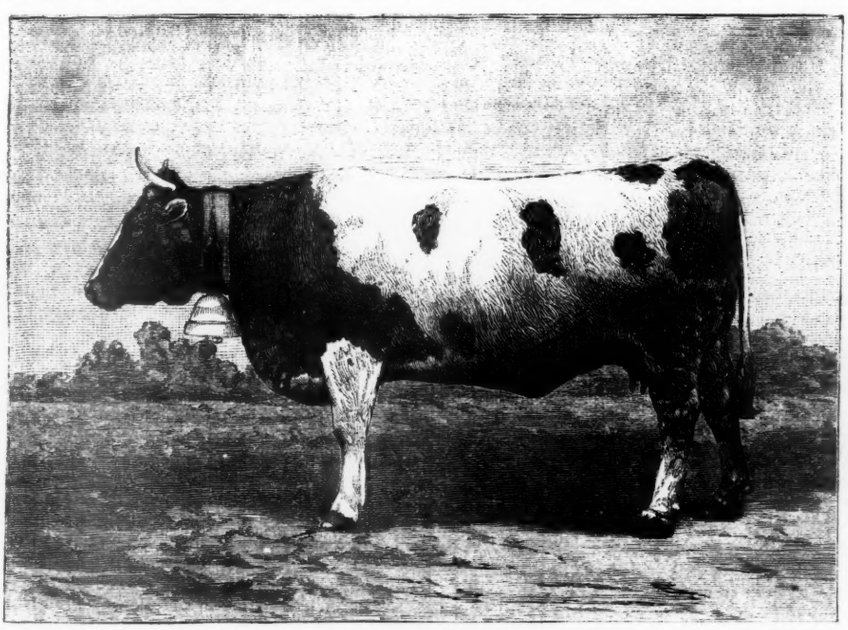


Fig. 2.—A SIMMENTHAL (SWISS) COW.

Smoothing Drags and Pulverizers.

The success of any crop depends greatly upon the proper preparation of the soil, which should be made fine and mellow, but yet compact and firm about the seed. It is better to spend two days work than one in preparatory fitting of the soil for a crop, because the extra labor will be liberally repaid by the better growth, from the first sprouting of the seed and the lighter labor of cultivating afterwards. We have recently examined an excellent implement for this work, the "Acme Pulverizing Harrow, Clod Crusher and Leveler." This consists of an adjustable bar in the front (see fig 1), which is moved by the lever so as to ride over the clods in

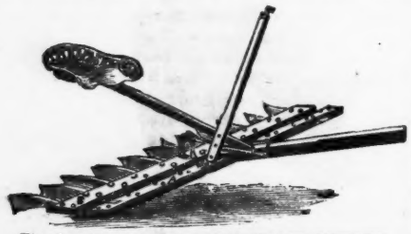


Fig. 1.—THE ACME PULVERIZER AND LEVELER.

rough ground and crush and break them by means of a number of teeth fitted into it. Behind this is a second bar furnished with steel blades, which cut the soil, pulverize it, and turn it in small furrows, leaving it in the best possible condition, covering weeds or sod perfectly. We find this machine to be adapted for other uses than are claimed for it by the makers. There is no better implement for covering seed, especially peas, which are difficult to cover by the common harrow; and the ground is left in the best condition for sowing grass or clover seed, after the seed grain is covered. By adding markers behind it it may be made very effective in marking out rows for planting corn, or drills for sowing beets. A coverer for grass seed sown after this implement is shown at figure 2. This may also be used for packing the soil in place of a roller, and on light soils will be found far more useful than that

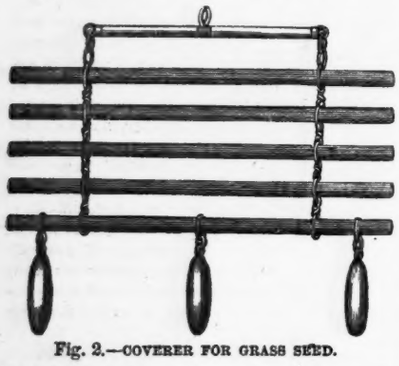


Fig. 2.—COVERER FOR GRASS SEED.

implement. It consists of a number of rails or poles fastened together by means of two light chains. If desirable, markers may be attached to this implement in a manner shown in the above engraving.

Milk—What is It?—The natural food for the young of all mammals is milk—a rather complex fluid, the physical properties of which it is not necessary to describe.—The principal constituents are water, sugar, caseine, albumin, fat, and several salts. The sugar, when separated, looks much like the ordinary kind from the cane, but is much less sweet. Caseine is one of the leading constituents, and is the part which, when removed from the milk, becomes the cheese. The caseine exists in small particles in the milk, and is contracted or gathered into large masses by the action of acids or rennet. The albumin remains in solution after the caseine is removed, and is separated by boiling, when it appears as white curds, somewhat resembling the white of eggs in appearance, as it does also in composition. The fat is not dissolved in the milk, but suspended as little globules with thin coverings. In the process of churning, these globules are broken, and the fat collects in lumps of various sizes. This fat, when worked, salted, etc., is the butter of the market and table. The ash is but a small part of the milk, and consists of a number of substances, which are left behind when the milk is dried down and burned. There are many things to influence the percentage of these various ingredients of milk. It is far from the same in different species, and among cows, the breed, feed, general treatment, age of animals, etc., all have a modifying influence.

Ventilation of Barns and Stables.

The moist air of barns, and the foul air of stables, should be carried off in the most direct manner. Ventilation depends upon the fact that warm air rises and will escape from the upper part of a building, if cold air is admitted at the lower part. But if no openings are made below, the air remains stagnant, and cannot escape at the upper openings. In all arrangements for ventilation, these requirements must be met, and a neglect of them has often prevented the successful operation of costly, but faulty methods. In barns, a want of adequate ventilation encourages mildew, sweating and moulding of the contents, and in some cases over-heating, and spontaneous combustion of hay that has been stored in too moist a condition. The usual method of ventilating barns by means of one central cupola, or by a window in one or both gables, is dangerous,

Fig. 1.—VENTILATOR FOR BARN.

because it confines the escaping air, which is always charged with moisture in the summer time, to one considerable stream, and moist air, being an excellent conductor of electricity, serves to make the most dangerous lightning-rod—so to speak—to bring the lightning into the barn, and so set it on fire. This explains the cause of the frequent destruction of barns by lightning, during the season of harvest or soon after. It is wise, therefore, to break up the stream of air which escapes, both by having several ventilators, and to arrange these with slatted work on each side, to conduct the escaping air in downward or horizontal currents, which will spread laterally in a sheet rather than pass upward in a column. A useful ventilator for a barn is shown at figure 1. This is a tube of sufficient capacity, which starts at the ceiling or floor of the lower story, and passes through the upper one. If the upper part passes through hay or grain mows, it will be advisable to make several openings in the tube at that portion, that it may carry off any heat or moisture, which may exist in the hay or straw, soon after it is

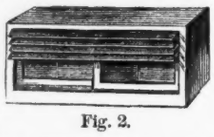


Fig. 2.

Fig. 3.

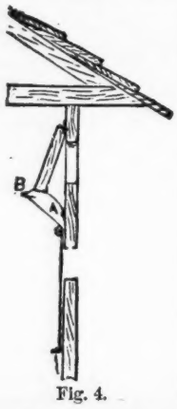


Fig. 4.

put away in the barn. Where this form of ventilator is not suitable, others may be provided in the eaves; one shown at figure 2, consists of a wooden frame, set in the wall near the ceiling or floor, in the manner of a window frame; the upper half of this frame is furnished with blind slats, so placed, as to facilitate an upward and outward current, the lower half has two sliding windows, or panels, which admit fresh air, while the foul hot air flows outward. This fresh, cool air drops down to the floor and makes a circuit, forcing out the foul air, and purifying the whole building. This arrangement has the advantage of distributing the fresh air, and more effectively, if the panels are fitted with slats set on end, and each half reversed, so as to force the air in different directions. Another ventilator, figure 3, set in the eaves of a stable, consists of a falling door, so hinged, that it closes of its own weight, and is opened by a cord arranged as shown in the engraving. The same kind of a side ventilator door may be held open by a piece of wire spring, figure 4, *A*, and closed by a cord, fastened at *B*. Another ventilator may be made by sawing out holes in the board, and pivoting on a cover with similar openings; this cover being moved by cords, to open or close the spaces. This ventilator, shown in figure 5, is one easily made and operated. The matter of thorough ventilation of barns and stables can not be too strongly insisted upon, as it determines in great measure the health and therefore the value of the stock contained in them. Pure air is as essential as pure food, and can only be secured to confined animals by a proper circulation through ventilators.

5.—WHEEL VENTILATOR.

Among the Farmers.—No. 50.

BY ONE OF THEM.

One of my good neighbors met me at the store with a new pair of sheep shears. "Well," said I, "isn't that rather forcing the season, you don't shear sheep in January, do you?"—"No," said he, "but we use the shears to clip the horses' fetlocks. They are getting long now, and hard to keep clean. I always clip them about the time they are fully grown out. The horses look much neater for it."

Grease ("*Scratches*") in Horses.

My friend's stable contains some ten or twelve work and road horses and colts, several of them of great excellence, and he has been almost every season more or less troubled with *grease*, or "scratches," as it is vulgarly called. No horses could have more attentive and careful grooming than his, and why he should have Grease in his stable I have, until now, been utterly at a loss to surmise.

Many years ago I read that the fetlocks constituted a protection to the skin on the pastern and above the heels, where it is especially sensitive, and as I had found that on horses deprived of this protection, that they might be more easily cleaned and kept clean in muddy weather, those parts often became red and irritated, if not drusy, I stopped the practice at once, and we have never since had chapped heels, or any trouble approaching Grease in our stable. Besides, I have taken some pains to inquire and observe, and have not yet found "scratches" originating in a stable where the fetlocks were left on, and where when the horses came in wet and muddy were simply rubbed off with a wisp or two of straw, and thoroughly cleaned with a good brush when dry.

Prevention is better than cure—and I think the sweeping assertions of the books that the disease is found only in neglected stables, and is always a disgrace, notoriously erroneous. Wrong care can just as well produce it as neglect.

Road Taxes

are certainly a great burden in this country, consid-

ering how poor our roads are. We have town or district meetings, and vote money enough to keep the roads as they are—simply not dangerous—for a year—and we do well if some opposer of taxation does not lead off an opposition to any appropriation—and so we are content to take half or a third of the sum at first deemed desirable and necessary. We plunge through sloughs in winter, and rack our wagons in ruts, or creak through sand, and see no remedy. Year after year we are taxed, and though there are a few more roads, they are no better than they were a hundred years ago.

How Is It in the Old Countries?

They have been steadily improving. The possession of good roads is something rather recent over the greater part of Europe. It has come, for the most part, within 150 years; and that is since many of our roads were laid out in the Eastern States.

We have here no distinct classification of roads. A public road is distinguished from a private road, and from a right of way, but so far as custom goes there are no other distinctions except when turnpikes or plank roads are chartered. It would aid greatly if the State Legislatures would classify roads and establish certain as first class, and require that the townships through which they pass should keep them in such good order that the heaviest loaded wagons, or even artillery trains, would nowhere sink an inch deep in the mud. Roads once put in such order would require but a small annual outlay to keep them so, and the State ought to pay half the cost of making them at the outset. There is another class of thoroughfares which the county ought to aid the township in making, and which might differ from the first class roads only in the steeper grades and narrower road-bed. Highways of the third class should be just as good as the township could afford to make and keep in order.

Take the country around New York and the neighboring cities as a sample of the rest of the country, and it is clear that the market gardeners of the immediate vicinity have great advantages over those at the distance of ten miles, which would be of little moment if they had good roads over which at all seasons, and especially in the spring, they could trundle their heavy loads to market.

A few years ago farm products, potatoes, cabbages, squashes, apples, and garden vegetables, in their season, used to be transported from a large section of country about here in boats, or in wagons upon the boats to New York. Then the railroads were built, and this class of merchandise was more rapidly and easily sent to town by rail. Now these same railroads bring this very class of goods from the western part of the State of New York, from Pennsylvania and Ohio, just about as cheaply as they will take our truck only 15 or 20 miles. It is therefore very important for the farmers and gardeners to have such roads to the neighboring cities as will make them independent of the undiscriminating rates of the railroads. There are thousands of acres of warm light land, well watered, early and easily worked, which, being within some 16 to 18 miles of the densest population of New York, might and would be used for raising vegetables if we only had better roads. This system of

Farmers Marketing their Own Produce

ought to be encouraged in every way by municipal authorities. The action of the New York authorities has been the reverse of encouraging to this kind of traffic. Whereas in Philadelphia, and many other cities, the people, or all who wished to do so, could buy every thing which the farmers and gardeners had to sell of the producers themselves, in New York, but little of that kind of trading could be done—and this little is beset with inconveniences—so that but few things could be sold in this way, potatoes, turnips, cabbages and green corn, tomatoes, carrots, peas and string beans, spinach and pot-herbs, with celery and horse-radish making up the list. Country-dressed meats, sausages, head-cheese, poultry, eggs, butter and pot-cheese, with the firmer fruits in their seasons, are rarely or never sold in New York by the producers. The result is bad both for the citizens who buy and for the neighboring country folk who are the producers.

Draining at Houghton Farm.

Visiting Houghton Farm a few weeks after Dr. M. Miles had arrived and fairly settled down to work, I was delighted to find that the excellent system of laying tile drains, which he had inaugurated in Michigan, was here introduced and in full operation, with such improvements as his ever ripening experience would suggest. There are two ideas which may take possession of those who undertake land drainage. One is that stones, brush, poles, boards, etc., which are sometimes used as substitutes for tiles, are really cheaper than tiles, and are even tolerably effective, and to be trusted for a considerable length of time. The other is that, aside from the proper surveyor's work, which is indeed very simple, there is great difficulty in getting the drains well leveled, and the tiles laid and covered without displacement. Any one who could have watched the operations of the ditch diggers, and tile-layers, as I saw them at work would I think be disabused of both of these ideas. The land where the men were at work was so nearly level that the fall appeared to be quite in the opposite direction to that which it really took. It is generally easy enough to lay the drains in land which has a considerable slope, but difficulties are encountered when there is but very slight fall. The drains in this case were staked out in eight-rod lengths or thereabouts, and dug out pretty nearly to the required depth, which was 3½ to 4 feet, according to the undulations of the surface. Then, instead of using "boning rods" to determine the grade of the bottom of the ditch, a cord was stretched above the centre of the ditch, just high enough to clear the heads of the workmen. It was supported on "shears" (fig. 1) at each end, made by bolting together, five or six inches from their ends, two strips of wood like fence pickets, but of pine or some light wood. These strips are 6 feet long, and about 2½ to 3 inches wide, of ¾ or 1 inch stuff. The ends are left square. A stout, light line, like a carpenter's chalk line, is stretched between these shears, which are placed straddle of ditch, one at each end of an eight rod length. To hold the shears firmly in place, the line is given one turn around one of the upper ends, and is then made fast to a stake driven into the ground ten or twelve feet away. It is important that the line should be taut, hence it must be light and strong. There will be a little sag in it, of course. This is practically taken out of it by means of "rests" placed at two or three points along the line. One of the rests is shown in fig. 2. A fork or rake handle, shod with a point of iron and capped with a short piece of gas pipe, having a movable arm 2 feet long, standing at right angles to it, and held in position by a wedge, completes the simple and efficient instrument. This is driven firmly into the ground near the ditch, and the end of the arm placed under the cord and raised just so as to take the sag out. In this case the line was set just 7 feet above the ditch bottom where the tiles were to rest, which placed it clear of the heads of the workmen. It is obvious that the adjustment of the line is exceedingly easy, as by spreading the legs of the shears it would be lowered, and by drawing them together it would be raised. Figure 3 shows the line above the ditch, supported by a single rest.

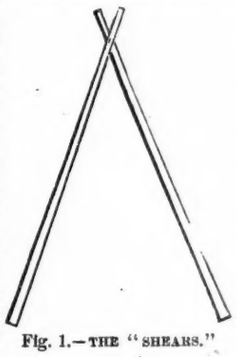


Fig. 1.—THE "SHEARS."

Fig. 2.

Fig. 3.—SHEARS AND REST IN USE.

Two men were at work finishing a ditch and laying the tiles. One had a seven-foot rod, which was kept close by, and every now and then he tested his work and that of his companion by setting it on the bottom of the ditch and moving it under the line in a small arc. As the "finishing" of the ditch proceeded the tiles were laid. They were using inch and a half tiles with collars. The seven-foot gauge stick was notched to indicate the hight of the tiles, and again to show the hight of the top of the collars, so that placing the gauge stick in the ditch it would just clear the cord; placed upon the tile the line would lie in one notch, and placed upon the collar it would lie in the other.

This whole arrangement enabled the men to work with extraordinary rapidity. If moderately intelligent and trusty, they can be left quite to themselves, and will do accurate and good work. Two men had, within two hours and a half, cleaned out four to six inches of the bottom of a ditch, and "finished" a bed for the tile, laid and covered them 8 inches deep, in one of the eight-rod lengths to within twenty feet more or less of the end. There were a good many stones in the bottom, too, which made "finishing" rather tedious. They had

Fig. 4.—THE PUSHING SCOOP.

Fig. 5.—THE PULLING SCOOP.

Good Tools,

in fact, the best draining tools I ever saw.—The spades do not differ essentially from the common English draining spades, but are lighter and with D-handles. Two sizes only are used for digging, for 2, 3, 4, and 5-inch tiles. The blades are 17 inches long, the handles 28.

For finishing the ditches tools termed "finishing scoops" are generally used. These are both for pulling or pushing, figs. 4 and 5, and the blades are set upon long handles, by means of goose-necked sockets, by which the requisite angle is given to the scoop. The "Houghton Farm Scoop," figure 6, as I should call it, is similar to the others in the form of the blade, but the attachment to the handle is made at the middle of the scoop. (See illustration.) Thus the pull and push scoops are combined in one, a much stronger, lighter, and more efficient implement. The attachment being much stiffer, and the leverage between heel and point so much less, the angle at which the scoop is set is not nearly so likely to be changed by

Fig. 6.—THE HOUGHTON FARM SCOOP.

any accidental strain or bending, which makes a great difference in the ease and rapidity with which work is done. I noticed scoops in use which had been altered from the common ones, by placing the

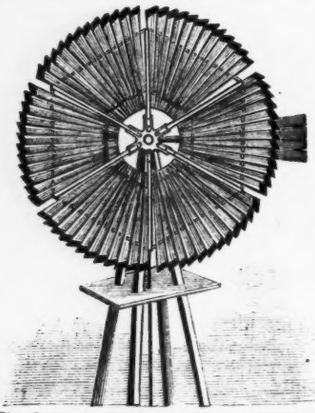


Fig. 1.—THE ECLIPSE WINDMILL AT WORK.

handle attachment in the middle, and others which were made of old saw-blades bent into the suitable form, and handled as described. The blade is preferably about 13 inches long, and the length of the handle, for all ordinary uses, only five feet instead of seven or eight, as they are commonly made.

There were some 20 men, I suppose, at work at this job of draining, and I certainly never saw such work go on more smoothly and rapidly, and at the same time so thoroughly well. It seems quite worth while to present the matter with some detail to the readers of the *American Agriculturist*. In ordinary underdraining, as done with boning rods on the usual plan, it is rare that the levelling is so accurate that there will not be a variation of more than half the diameter of tile, producing tendencies to fill up with silt, and frequently stoppages, after the drains have been in use only a few months.

When laid on Doct. Miles' plan, the superintendent has only to see that the lines are at the proper hight, and well stretched, then the workmen will do all the rest, with hardly a chance of an error in the level or fall of more than the thickness of the wall of the tile itself, if even so much.

This is only one subject of many, with which I came away from Houghton Farm, well charged, and feeling as if I could say a considerable that would be of advantage to many of my fellow farmers.

Improvement in Wind Engines.

The power of the wind is much greater than is generally suspected. If the air were visible it would be seen in motion very much like water, the current smoothly flowing when no obstructions interfered, but whirling, eddying, and irregular in its force, as obstacles to a free movement deflect

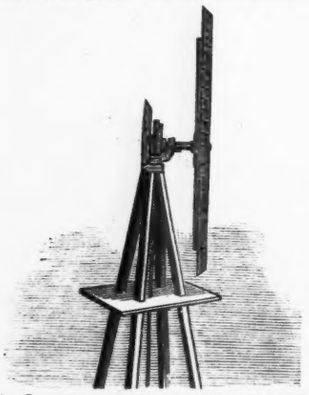


Fig. 2.—THE ECLIPSE OUT OF THE WIND.

the current into many directions. In making use of the wind as the cheapest available mechanical force the peculiarities of its motion must be taken into account. Air possesses weight, and in moving against a fixed object its momentum exerts a force just as much as if it was a solid body that moved. The force exerted by the wind upon any stationary object is found by multiplying the square feet of surface opposed to the wind by the number of feet through which the wind moves in a second multiplied by itself, or squared and divided by .002288 or $^{2288}/_{1000000}$; thus one of the 10-foot wind engines having 68 square feet of surface, in a wind moving 30 feet per second, or about 20 miles in an hour, which is what may be called a pleasant, brisk breeze, will receive a propelling force of 136 pounds, or more than equal to the amount of tractive force exerted by a horse moving at the rate of 3 miles in an hour. It is evident that the full utilization of this power of the wind depends very much upon the excellence of the machinery to which it is harnessed to do our work, so to speak; the more effective this may be, the greater amount of the

Fig. 3.—A MECHANICAL ATTACHMENT.

force of the wind is turned to useful account. It is quite as important to investigate this point in choosing a wind-engine as it is in selecting a water-wheel. In calling attention to several excellent wind-engines we merely remark that for most of the work of the farm, dairy, and household, and for many mechanical works, a wind-engine is the most useful, economical, simple, and safe power that can be employed. With proper self-regulating devices it will work steadily night and day, without feeding, without watching or other attention, needing only occasional oiling, to work on, while the owner sleeps, eats, or labors elsewhere. The engine is able to regulate itself, instinctively, as it were, to all the changes of the wind; turning out of the wind and stopping when it blows with excessive force, and turning in again and resuming work when the gale moderates. No other mechanical power can thus be left to regulate itself, except perhaps a water-wheel, and even this, in floods—which may be parallel in their effects to a gale—suspends its working. The Eclipse Windmill, made at Beloit, Wis., is the first that occurs to us. This made a wide reputation at the Centennial as the only mill there that was not damaged by the great storm of June 27th of that year. It is shown at work in figure 1, and out of the wind at figure 2. A side vane (shown at fig. 1) receives the force of a storm and turns the mill edgewise to the wind. When the force abates a weighted arm brings the front to the wind again. A remarkable mechanical device, shown at figure 3, is attached to this mill. It is one that changes an up and down movement to a rotary one. As the rod, *A*, moves up and down, the buttons, *C*, press on the inner rim of the gear wheel and carry it round, one button working on the up stroke and the other on the down stroke, so that the wheel turns regularly and continuously.

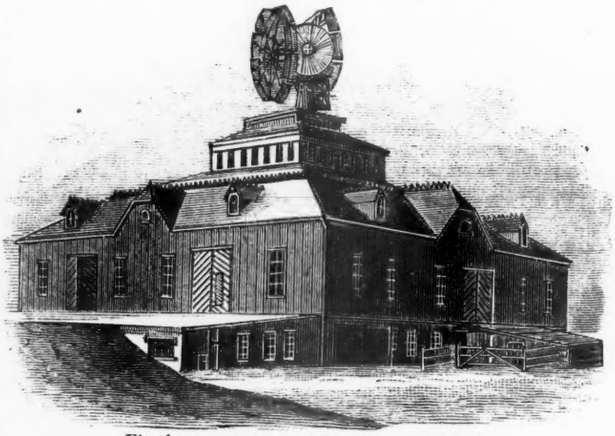


Fig. 4.—A DOUBLE-HEADED MILL ON A BARN.

It is claimed that 120 revolutions per minute may be made in a 12-mile (an hour) wind. This enables the mill to churn, saw wood, run a lathe, cut and grind feed, etc., as easily as to pump water. The Challenge Windmill, made at Batavia, Ill., is a popular mill, and is both single and double. A double-headed mill, erected on the barn of the well known breeder of Hereford cattle, T. L. Miller, of Beecher, Ill., is shown in figure 4. This is a 30-foot mill, and cuts hay, shells and grinds corn, and pumps water for 300 cattle, 200 sheep, and 200 hogs; besides doing the grinding for the neighbors. The fine barn here shown is worthy of notice.

Figure 5 is the Myers' Windmill, a rosette wheel with rudder, made at Salem, Ohio. The self-regulating device of this wheel is peculiar. The vane is parallel with the wheel, and lies flat when the mill is in gear. When the force of the wind overbalances the weight, this throws up the vane, and the wind striking it, turns the wheel out of gear. When the wind abates, the vane is turned, and the wheel is brought into work again, as seen in the engraving.

At figure 6 is shown the Perkins' Mill, made at Mishawaka, Ind. This mill has been made since 1869, and is of the solid or rosette form; it is also a self-governor. Another solid or "rosette" mill is the "I. X. L.," made at Kalamazoo, Mich. (fig. 7). This is a self-governor, the wheel and rudder folding together in a wind too heavy to be safe. It is able to turn partly out of the wind and still run when the blow is not too heavy. Figure 8 is the Victor Mill, made at New London, Ohio, which is moved by broad sails, so fitted as to turn on pivots and regulate and equalize the motion as the wind

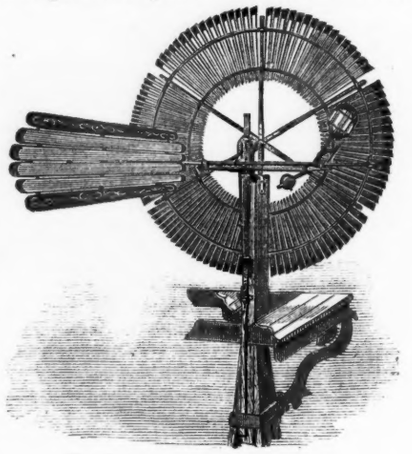


Fig. 5.—THE MYERS' WINDMILL.

may change. The regulating apparatus consists of the balls or weights seen in the engraving, which govern the position of the sails according to their velocity. The Stover Wind Engine, figure 9, made at Freeport, Ill., is a "rosette" mill with but three

joints and self-regulating, so that in a gale it turns itself edgewise to the wind and stops. A peculiar feed grinder, described in the *Am. Agriculturist* for Aug., 1879, is used with this mill. Its peculiarity is its light running power, being moved by very

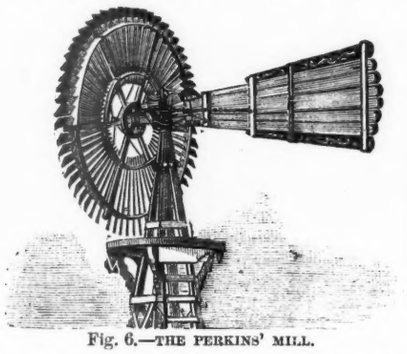


Fig. 6.—THE PERKINS' MILL.

gentle winds. The Triumph Engine (fig. 10), made at Racine, Wis., is a recent invention, and has no vane; this regulates itself in a high wind by means of a governing weight, which folds the wheel and turns the edges of the sections to the wind when the velocity becomes too great to run in safety.

Each of the above mentioned engines is made by respectable and responsible manufacturers. Each one has special points of its own, which are described at length in the manufacturers pamphlets and circulars, and those who need such machines can use their own judgment as to which might suit their fancy or meet their necessities. For addresses of manufacturers, see business columns.

Influence of Parent Upon Offspring.

Many and different views have been held upon the relative influence of parents upon their offspring; but in modern times, the discussions of this question date from the publication of a number of prize essays, written on the following subject: "Whether the breeds of live-stock connected with agriculture, be susceptible of the greatest improvement from the qualities conspicuous in the male, or from those conspicuous in the female parent." This was in 1825, and the prizes were given by the Highland Agri'l Society of Scotland; the essays, wholly, or in part, appearing in the Transactions of this old Society. The claims of one of these writers, can be briefly stated in his own words. "Any hypothesis which would assign a superiority, or set limits to the influence of either sex in the product of generation, is unsound, and inadmissible." This assertion seems bold, but we will see that even with 55 of the best years of thought and investigation in this direction, the essayist was not far from the truth as the matter stands to-day. Another writer asserts that the greatest modifying influence is possessed by the male, and gives a number of cases to prove his point. These instances cited by the essayist, admit of a different interpretation. Dr. Miles, in his "Stock Breeding," says on this point, "the males used being more highly bred

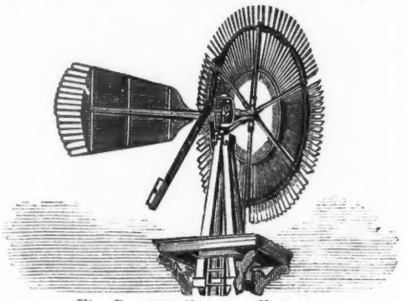


Fig. 7.—THE "I. X. L." MILL.

than the females, and therefore likely to be prepotent in the transmission of their qualities, his conclusions as to the superior influence of the male, are not sustained by the evidence presented." There is an important thought in this quotation. The "more highly bred," that is, the longer animals of like or similar characters are bred together, the stronger becomes the power of stamping those characters upon the offspring. When an animal thus bred, is crossed with one without any strong common characters in its ancestry, the former has the greater influence—the controlling power over the offspring. So far as known, this principle holds equally good with females as males, but as, in general practice, a blooded male is crossed with grade or "native" females, and the result is an animal more after the sire than the dam, it is quite natural that the conclusion of the writer might be obtained. The reason why, in the majority of cases, the males will be the higher bred, goes without saying, the whole question resting on the fact, that a male can serve a number of females. Through the purity of the blood of the males, must the mass of domestic animals be raised to a higher standard, and it is the work of the pure-blooded female, to produce these males to go out and infuse this higher blood; to impress good, strong characters, on the otherwise comparatively plastic natures of the low-bred stock, or in other words, those that have not been *bred* at all.

We must not confound strength of character, as we have been using the term character, with the vigor and strength of the animal. A male of high constitutional development, full of animal life, may be very weak as regards its power to impress itself upon the offspring, and *vice versa*. Aside from breeding, or the lack of it, there are other, though secondary conditions, which determine in some measure, the animal's prepotency. Thus, the age has an influence. Animals either immature, or in old age, do not, in general, control the offspring to the degree that is observed when in the full strength of middle life. Again, the powers may be lessened by over use, to be regained after a period of repose. It is hardly necessary to mention that in some of these secondary modifying conditions the sexes do not share equally, as is especially the case in the one last mentioned. Another of the Highland

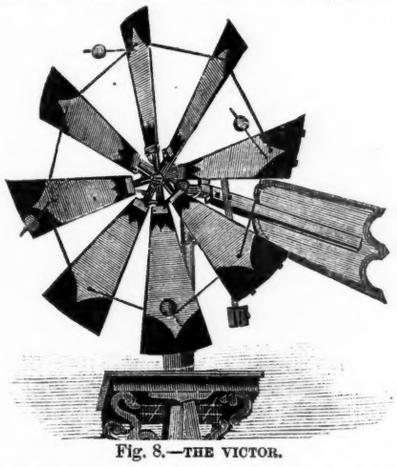


Fig. 8.—THE VICTOR.

essayists dwelt upon the theory that the male controlled the *external*, and the female the *internal* qualities of the animal. This ingenious idea has been the one most discussed in later times; but being based on pure assumption to start with, and not upheld by subsequent physiological, or rather embryological, study, it, like many others, has the Scotch verdict upon it; "Not Proven." Dr. Miles, whose work, above mentioned, contains all the most recent information on this question, says: "Instead of a limitation of the influence of each parent to a particular set of organs, we find the parent that is prepotent in the transmission of its characters, has a controlling influence upon the internal as well as the external organization of the offspring." Whatever the whole truth of the subject may be, at present it must be admitted that there is only one known law bearing upon it, and that is, "Like produces like;" the action of which results in fixity of character, and therefore controlling power.

Yeast as an Insect Destroyer.—In a recent paper on "Destruction of Obnoxious Insects by Application of the Yeast Fungus," Dr. Hagen, Professor of Entomology in Harvard University, states some facts and experiments, and suggests a probable remedy for the injuries caused by insects. The statements of Doct. H. are of so much interest to the agricultural world, that we make an abstract of them. It is a well known fact,

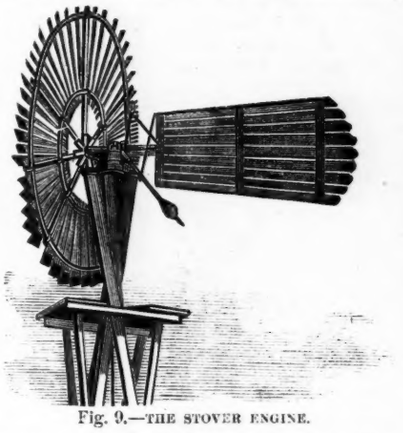


Fig. 9.—THE STOVER ENGINE.

—and one that especially troubles house-keepers late in the fall—that the common house-fly dies of a fungus, a white mould, which after death often holds the insect to the ceiling, window, etc. This fact suggested that other insects might be killed by inducing a fungus, or mould, growth within them. Yeast is a fungus, very common, easily provided, rapid in its growth, and the one it would seem of all others to be used for such a purpose. The mode of application is to sprinkle the obnoxious insects and their food with diluted yeast. This is the theory; but is it a practical one? All questions like this must be settled by thorough experiments, and, as far as the present goes, only a few trials have been made. Dr. Hagan states that four experiments are on record, three without success, but the results of the fourth are more favorable. In this case Potato Beetles were selected as the subjects, and after being divided into two parcels, one of the groups was sprinkled with a yeast solution on three or four successive days—the eighth day the sprinkled parcel of bugs began to die. All were dead thirteen days after the first sprinkling. Of the other parcel, only three had died, and all the rest were alive and well a month later. There were about 50 in each parcel. Upon examination with the microscope the fungus was found in abundance throughout the interior of the yeast-fed Beetles. The author of the paper arrives at the following conclusion: "That the application of yeast on insects produces in them a fungus which becomes fatal to the insects." It is evident that a large number of, and more extended, experiments are demanded before the practical value of this method of extermination of injurious insects is known. "The sprinkling of potato plants infested with the Potato Beetle and by their larvæ is easy, certainly as easy as the use of Paris Green, but less costly.... The application on greenhouse pests is so easy that

Fig. 10.—THE TRIUMPH ENGINE.

I hope the remedy will prove to be a great benefit to horticulturists." The remedy is so simple that it deserves at least a wide and general trial, which might result in showing this suggestion to be a great boon to farmers and cultivators everywhere.

Stiernward's Swedish Churn.

In describing, last month, the separation of cream by centrifugal force, it was mentioned that the invention was originally a Swedish one, though the American application of the principle was entirely original. Another Swedish dairy utensil may be worthy of note. This is a rotary churn which, although not entirely novel in construction, has

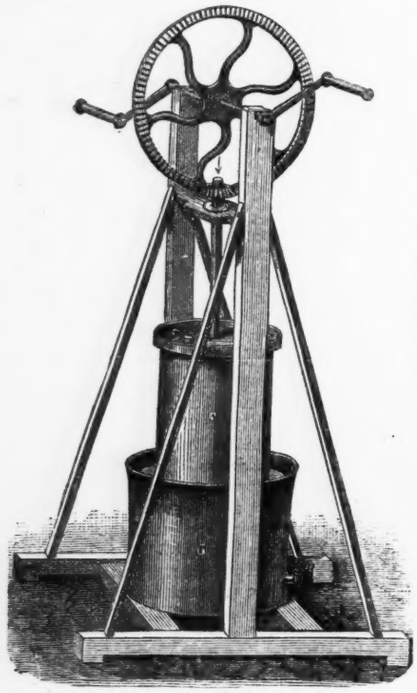


Fig. 1.—STIERNWARD'S SWEDISH CHURN.

some points which are made much of in some recently made churns. It consists of a tin cylindrical receptacle, figure 2, *F*, provided with 3 wings inside, *e*, *e*, *e*, which are pierced with holes. The dasher consists of a central tubular axis, having 3 wings, *E*, that are pierced with holes. A small turbine, *T*, is fitted at the bottom of the axis, with which it is connected. The axis is provided with a pinion at the upper part, which connects with a gearing upon a shaft and crank fitted in a frame, furnishing the motive parts, figure 1. The operation of the churn is as follows: The cream is put in the churn, *F*, which is surrounded by a jacket in which hot or cold water may be placed to warm or cool it—it is churned by the revolving dasher, *E*. As this revolves, air is drawn down the tubular axis by the operation of the turbine, *T*, and is forced through the cream, and is carried with it through the holes in the wings of the churn and the dasher, and serves to help, as it is claimed, in the production of the butter. The inventor claims that this churn will separate the butter directly from milk in quite as short a time as when cream is used, and that the remaining milk is perfectly sweet, and can even be boiled without curdling. In the present search for novelties in dairying, this may offer some hints to the ingenious and tireless inventors of new churns.

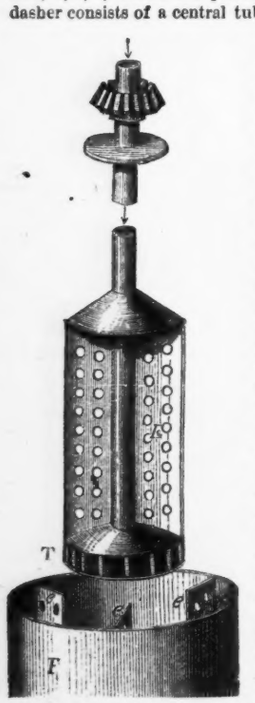
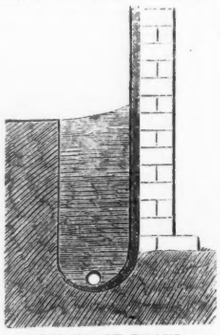


Fig. 2.—THE CYLINDER.

Draining a Wet Cellar.

There is frequent complaint of wet cellars. Several communications are now before us requesting advice as to preventing the entrance of water through the walls of cellars that are dug in rock or clay. Where surface water fills the soil it will penetrate a cellar wall unless means are provided to carry it off. The most simple method is that shown in the accompanying engraving. This is intended for those cases in which surface water enters the walls, being prevented from sinking by impervious clay or rock above the level of the bottom of the cellar. In these cases it is not necessary to drain lower than the top of the impervious stratum. The drain here shown is carried down to this stratum, and tiles, stones, or gravel are laid to carry off the water which is caught in the drain. The cellar wall is protected by a coat of cement, shown by the dark line; this is carried under the drain tile so as cut off the flow of water and turn it into the channel. The trench should be filled with broken stone or gravel, so as to furnish an easy course for the surface water to sink to the tiles. In case water rises in the bottom of the cellar the drain should be dug at least a foot below the level of the floor. In choosing a site for a house much trouble may be avoided by examining the spot where it is proposed to place the foundation, and in digging for this, where water is present in the soil, or it may be expected, the excavation should



SECTION OF DRAIN.

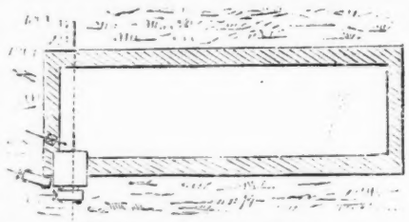


Fig. 1.—PLAN OF ICE POND.

be large enough to allow the drains to be put in when the foundation is built. This will prevent all trouble and inconvenience that might arise.

An Artificial Ice Pond.

The mild weather of the ice-making season renders any description of ice ponds somewhat tantalizing, but as an ice pond cannot be made in a day, nor in the winter, it is pertinent to describe anything new in this way, although there may be no ice. A novel idea in the way of ice ponds is communicated by Z. M. Jin, who, following our suggestion for a Water Collector, (Oct., 1879, p. 384), is making an

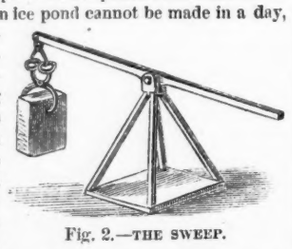


Fig. 2.—THE SWEEP.

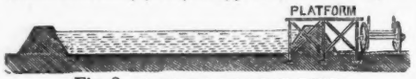
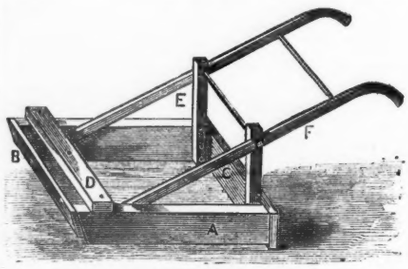


Fig. 3.—A SECTION OF THE POND.

ice pond on a similar plan. At figure 1 is his plan of the pond, which is partly made by an embankment 4 feet high. The pond is 40 by 150 feet, which would give 4,500 cubic feet, or about 150 tons, with a thickness of 9 inches of ice. A platform is built at one corner for loading the ice, and a derrick made in the fashion of the old well sweep, is fixed on the bank near by. The sweep is shown separately, with the tongs, at figure 2. At figure 3 is a section of the pond, showing the banks and the platform. It is intended to fill the pond with water by means of a pump, worked by a windmill situated near by.

A Handy Corn Coverer.

Mr. Clarence Hollins, Todd Co., Ky., sends a sketch of a home-made implement which the farmers in his vicinity have been using for a number of years for covering corn, peas, beans, and other large seeds planted in rows. "It does the work nicely where the ground is mellow."—The runners, *A*, are of heavy wood (oak) to give weight, 3 feet long, 6 to 8 inches wide, and 4 inches thick. The front piece, *B*, is 20 inches long, and is raised an inch at the bottom, to allow the loose soil to pass under, while it throws the sods and stones out of the way. The back piece, *C*, is an inch lower on the bottom than the sides, so as to drag in the loose soil and fill up the furrow, leaving the seed well covered, and the soil level and smooth. The bar, *D*, binds the whole together; it has a hole in the center, to which the clevis for the whiffletree is attached. The standards, *E*, are fastened in place



A CHEAP CORN COVERER.

with large nails, and are of sufficient hight to support the handles, *F*, by which the implement is easily guided.—Mr. H. having just completed a useful home-made affair from a drawing in the *American Agriculturist*, was impressed with a desire to return the favor, and sends the above, an example that we strongly commend to other farmers.

Hints and Helps For Farmers.

DRAINING SLOUGHS.—An Iowa farmer has a slough in his farm, which prevents the working of the land in the spring, until it is too late to plant, and wants to know how to drain it effectively. This is but one case in hundreds, in which the same difficulty occurs. To remedy it is a simple matter. When the ground is dry, plow out the center of the swale, until as deep a trough as possible is opened; then plow back and forth in the center to loosen the ground, shovel out the earth, and put one horse in the ditch with the plow to loosen the earth still more, until it is 2½ or 3 feet deep. Then make a smoothly graded trench with a spade, and if stone or coarse gravel is handy, fill the trench 2 feet deep, and as wide as may be convenient; or if no stone is at hand, lay 1 or 2-inch tile at the upper end, down to the fork of the swale, as shown in figure 1. There dig a sink or "sump," figure 2, to collect the water with any sediment that may be in it, and lay 2 or 3-inch tile from the sink to the outlet. Then cover the stone or gravel with the plow, and smooth the whole hollow down to the center from both sides;

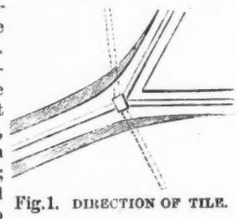


Fig. 1. DIRECTION OF TILE.

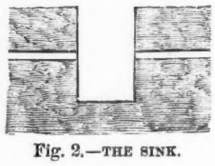


Fig. 2.—THE SINK.

if tile is laid, this should be covered at first with soil carefully by hand, and trodden down. Afterwards the trench may be filled by the plow.

To Cold-Smoke Meat.—Meat is injured in smoking by excessive heat. The smoke should be

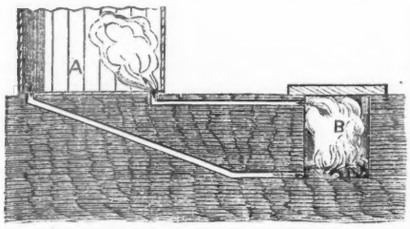


Fig. 3.—ARRANGEMENT FOR COLD-SMOKING MEAT.

cold to produce the best effects. To make cold-smoke, a fire pit may be made 10 or 12 feet from the smoke-house, and two feet deep. A flue of stone, pipe, or tile, may be laid from the bottom of the house, to the bottom of the fire-pit, and one from the top of the fire-pit, to the floor of the house (fig. 3). When the fire is lighted, and the pit is well supplied with bright coals, it may be filled up with green hickory wood in small pieces, or chips, and the cover, a flat-stone, placed over it. The smoke will then be strongly charged with Pyroligneous Acid, and will be cool; this will give the best flavor, and the longest keeping qualities to the meat.

How to Tar Hemp or a Rope.—A coil of rope or hemp yarn, may be tarred by the use of the contrivance here shown (fig. 4). It is a trough to hold hot tar, having a roller fixed on each edge at the sides, and one at the bottom. The rope is drawn from the coil through the tar, and upon a reel, as seen in the engraving. If too much tar is carried over, two rollers may be used on the side where the rope passes out, and the upper will press out the surplus tar, or a bunch of oakum may be fastened below the roller to wipe off the loose tar;

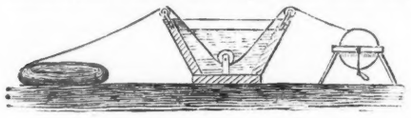


Fig. 4.—MACHINE TO TAR A ROPE.

but unless the tar is wasted, it will be well to let some extra go over the roller, as it will be absorbed by the rope on the reel. To tar a thick rope, it should be drawn over the two rollers, and as it passes, the tar may be brushed on with a coarse brush. The reel may be turned slowly, and the rope drawn from the coil placed at some distance, to give sufficient tension to the rope. With a machine like this, tarring a rope is rapid and easy.

A Harness Bench.—A subscriber from Indiana, sends a sketch of a harness bench, with the following description. The bench is a common four-footed one, and serves for a seat. The clamp is made of two halves of a barrel stave, screwed firmly to the block which is fastened to the bench by a pin, that is made firm by putting in a wedge underneath the bench. The edges of the jaws are beveled so as to come together evenly, and take a firm hold of the leather. They are held together and pinched by means of a pin and small key, figure 5. The pin is slotted, and the key passing through the slot is wedge shaped, so that the jaws are tightened by

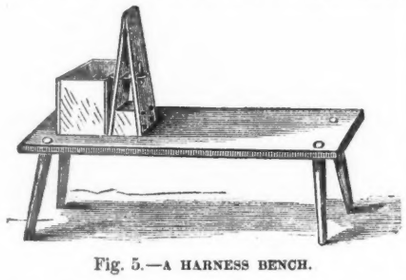


Fig. 5.—A HARNESS BENCH.

pressing the wedge down in the slot. The box in front, is for tools, thread, wire, rivets, etc., etc.

Washing Dairy Pans.

There is much labor in washing milk pans, and as, in careless hands, this work is certain to be ill done, it is well to contrive some plan in which it can be done easily, and then it will be more likely to be well done. By using some simple contrivance, pans may be washed without handling them. Recently the writer, having occasion to show a hired man how to clean some dairy utensils, made use of a Whitman Fountain Pump, which threw a stream of water into the cans and pails with considerable force, and cleansed them perfectly in a very short time. This was done on the grass outside of the dairy-house, and the convenient method may be elaborated so as to make a most serviceable plan of washing, thus saving much labor. The first requisite is a rack to hold the pails and cans, sloping forward slightly, so that the water can be easily forced in and will run out readily. A rack, made as in figure 3, consisting of a shelf slightly sloping, supported by side pieces, and a foot-board, will answer the purpose. The pails and cans may be laid upon this shelf, a light cross-bar preventing them from slipping forward, and may be piled one upon another. A stream of water can be directed into them through a hose, either by the pump above mentioned, supplied from a pail, or by a hand-force pump, a Blunt's Universal pump, for instance, with which the water may be forced from a well at some distance. But the plan, once explained, can be easily modified or changed to suit any circumstances; the easy washing of the pans being readily understood. Another method is shown at figure 1. This consists of a stout standard supplied with galvanized iron rods, upon which the pails may be hung and washed. A very complete apparatus may be made by carrying a lead pipe, with branches and jets, to the mouth of each pail or can, and connecting the bottom of the pipe with a hose from the force pump. After the pans have been washed, they may be left to hang upon the stand to drain and air. A frame of a similar kind for the washing and airing of shallow pans, is shown at figure 2. This consists of a standard with double rods spreading so as to give a firm seat for an inverted pan, shown also at figure 4, with the pan reversed. These may all be used in the washing-room of a dairy house, made as it should be, with a cement floor sloping to a drain; or they may be fitted on a plank floor outside, so placed that the water will flow off on the grass, or into a channel which will take it where it may do the most good. The idea is given in its crude and partly developed condition, to be improved upon as may be possible by those who perceive its usefulness. It is certain that much may be done to simplify the laborious hand-washing, which is especially disagreeable in the winter time, and is always slow and sloppy work.

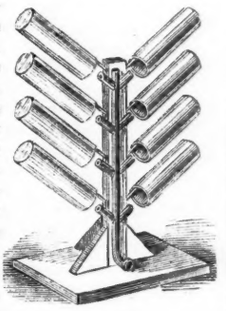


Fig. 1.

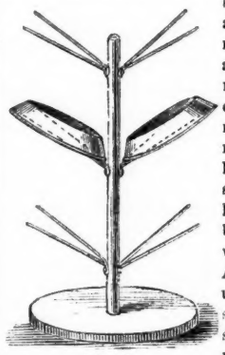


Fig. 2.

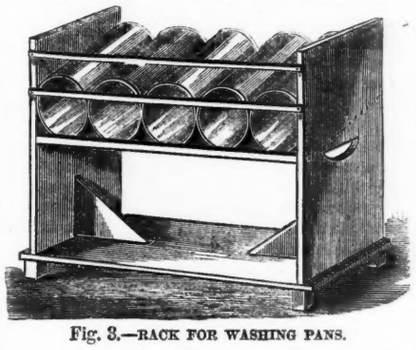


Fig. 3.—RACK FOR WASHING PANS.

Fig. 4.

Our Domestic Animals.—To get an idea of the vastness of the interest of farm animals, we must look at the number this country possesses. Thus there are: Horses, 11,000,000; mules, 1,700,000; cattle, 32,000,000; sheep, 38,000,000; swine, 35,000,000. When figures are in the millions, as these all are, the idea of greatness is about the only one that is conveyed; but with that thoroughly in mind, the importance of farm animals is better understood, and their relation to our individual and national prosperity is much more easily comprehended.

The Manufacture of Amber Cane Sugar

Attempts have been made for several years past to overcome the difficulties in securing the granulation of the sugar contained in the juice of the different varieties of sorghum grown for that purpose. The trouble has been that the juice in the process of boiling down produced molasses which possessed an inferior flavor, and from which a very small proportion of crystalized sugar could be obtained. About a year ago a number of western men, interested in this matter, formed themselves into the Mississippi Valley Cane-Growers Association for the purpose of making organized efforts to secure a more successful result. The members planted cane, and worked it up into sugar under some improved processes with unusual success; and sugar of excellent quality has been made in many of the Western States, from Texas to Minnesota. The variety of cane grown in most of these experiments has been a new one, a supposed cross or hybrid of the Chinese and African sorghums, and known as Early Amber Cane. This has the advantage of early maturity, and can be grown wherever corn succeeds; its earliness also enables the sugar-making to be carried on during warm weather, when the process of granulation is more complete. Nearly all the sugar made the past season has been from this variety, and one lot of 45,000 pounds has been made by one party at Crystal Lake, Ill., and sold in the Chicago market. Of this

Fig. 1.—CRUSHING MILL.

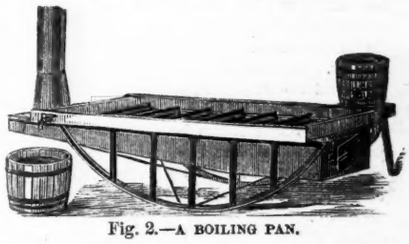


Fig. 2.—A BOILING PAN.

lot a sample was sent to us by Mr. I. A. Hedges, who is Secretary of the Association above mentioned. Mr. Hedges has been closely identified with the sorghum sugar interest for some years, and has recently published a small book on the

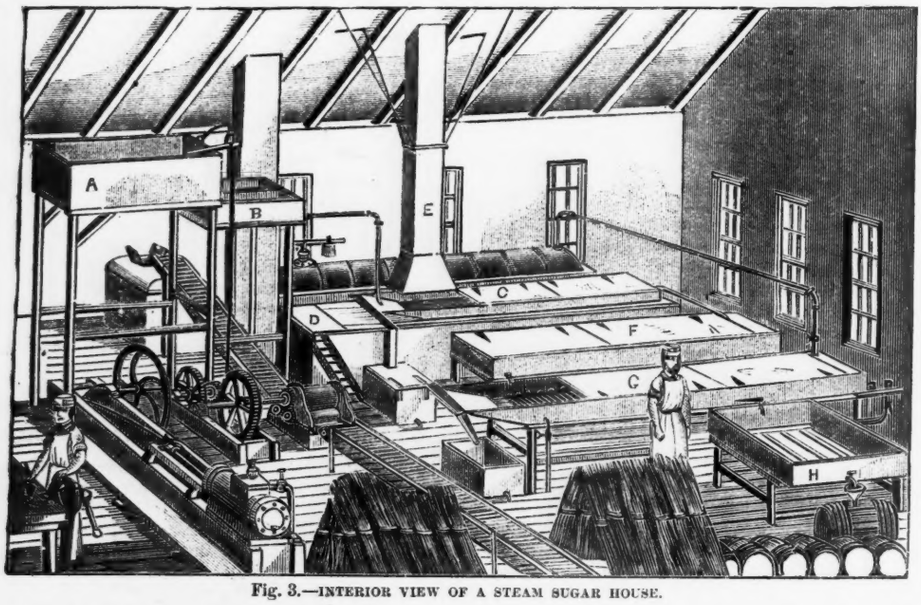


Fig. 3.—INTERIOR VIEW OF A STEAM SUGAR HOUSE.

subject, in which he gives details of what has been effected so far in producing sugar from sorghum.

It would appear that sugar of excellent quality may be made from Amber Cane wherever corn can be grown; the only question now to be solved is, can it be grown profitably. *Profitably* is a relative and not absolute term in this sense. A farmer may grow cane and make sugar for his own use profitably when he could not devote his sole attention

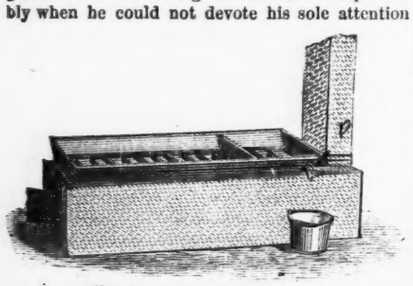


Fig. 4.—THE BOILING PANS.

to the business with profit; he may occupy his time and facilities that are not otherwise employed, and so in reality procure his sugar with but a very small outlay, just as one may make maple sugar at this season with profit by using time that would be otherwise idle. To know how this may be done is therefore a matter of interest to all farmers.

Amber Cane is grown and cultivated precisely the same as corn; the soil need not be in high condition to produce sugar; a fairly good, clean soil having lime in its composition, or being fertilized with 300 lbs. of gypsum per acre, is the most suitable. The crop is ready for gathering when the seed is hardening, or when almost fully ripe. The stalks are topped, stripped of leaves, and cut, bound in bundles, and set up in shocks until required for milling. The stalks are pressed in a mill having powerful rollers (fig. 1), and operated by horse or other power. The juice is gathered in tubs or a vat, from which it can be raised by a pump and poured into the filter, from which it passes to the boiling pans (fig. 4). The whole process of boiling, clearing, or defecating, and concentrating the juice, may be explained through the accompanying plan (fig. 3) of a sugar factory designed by Mr. Hedges and described by him in the book previously mentioned. The building is 60×40 feet on the ground and 20 feet to the eaves, and if it is practicable, at the foot of a bank, upon which the crushing mill may be placed, so that the juice may flow by gravity to the boiling pans. This plan, however, contains the whole of the machinery, the engine is seen on the left, and the mill with feeding and discharging apron connected with it on the right. The discharging apron conveys the "begasse" or crushed stalks into the furnace beneath the boiler of the engine. The juice flows from the mill into a sunken tank under it, from which it is pumped into the elevated reservoir, *A*. From this it passes into temporary tanks, *B*, in which it is "neutralized" by the addition of cream of lime, by which the natural acidity of the juice is corrected and the solid impurities are caused to settle. The cleared juice is drawn by a pipe into the heater, *C*. This is 25 feet long, 3 feet wide, and 14 inches deep, made of sheet iron three-sixteenths of an inch thick. The heater slopes to one end to facilitate skimming, and is covered with lids, to encourage the boiling. The boiling juice is skimmed, and the scum is drawn off with a light scraper into a tank, *D*, at the upper end of the heater. The steam from the heater is carried off through a chimney of boards, *E*, passing through the roof. The juice passes through this pan in a steady stream through a pipe into a second one, *F*, made of sheet iron, enclosed for protection in a wooden tank. In this the juice is left to settle, and is drawn off into a third pan, parallel with it, *G*, in which it is again boiled with the addition of more cream of lime to neutralize acidity, or albuminous matter, such as the white of egg or blood, is added to cause the liquid to throw up in the form of scum all impurities contained in it. In the plan, this pan or defecator has a steam coil for heating. The scum from this pan is raked off into the spout at the upper end,

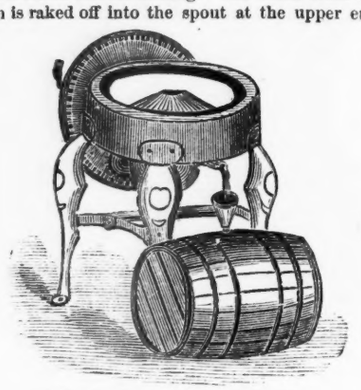


Fig. 5.—THE "CENTRIFUGAL."

from which it passes into a vat where it settles and separates, and from which the clear syrup is drawn off to be returned to the heaters. When sufficiently concentrated the syrup is drawn off into the cooler, *H*, and from this into barrels. If intended for sugaring, the syrup is more carefully worked and purified in this pan, and then run off into a granulating vat sunk in the ground under the pan or elsewhere, in which, after standing some time, the sugar separates, and the molasses is pumped off. For small works a finishing pan (fig. 2) designed by Mr. Hedges may be used. This can be emptied by tilting into a movable vat, from which the molasses may be removed, to granulate. After granulation the sugar is separated by draining in a vat or barrel, or is "swung" in a "centrifugal" (fig. 5) in a similar manner to that in which honey is freed from the comb. The process of sugar-making does not depend upon the use of any particular machinery, but upon certain mechanical and chemical operations, in which the water of the juice and any vegetable fibre, or other impurities contained in it, are removed, and from which the actual sugar is separated. Mr. Hooker, of Illinois, has succeeded in producing sugar in the following simple manner: A wooden, 2-roll, mill, fig. 6, a tub, and an evaporator, made on the same plan as that shown at figure 2. The juice (27 gallons) was poured into the boiler, and when the juice was warm a tablespoonful of soda was added; the scum was removed as it rose; when the juice was reduced to a thin syrup a tub of fresh juice was added, the soda was again used, and the skimming and boiling repeated; this process was continued a third time, and the juice boiled down until sugar was found by the tests used in making maple sugar to be ready to granulate. The syrup was then run into a tank and set away in a warm place to granulate and separate. The sugar made in this way was of

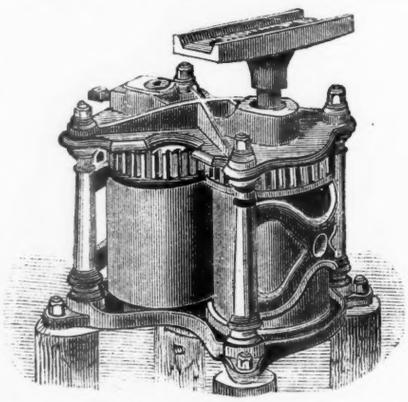


Fig. 6.—A TWO-ROLL MILL.

good quality; but from defective neutralization the quantity was too small and the molasses was acid.

At Crystal Lake, Ill., the cane from 600 acres was used the past year. The crop was very light, the season being unfavorable and the growers inexperienced; much of the planting was not completed until June 20th. The yield was so satisfactory that preparations are making for an extensive business the coming season. In this instance the best sugar machinery was used, including a costly vacuum pan and the best practical and experienced sugar experts were employed. The parties consider that the question of the profitable manufacture of sugar from sorghum is settled, provided the growers produce the syrup, and experienced sugar-makers work it up into the final product with the proper machinery.

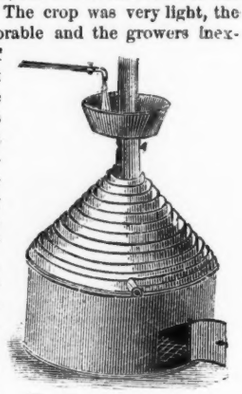


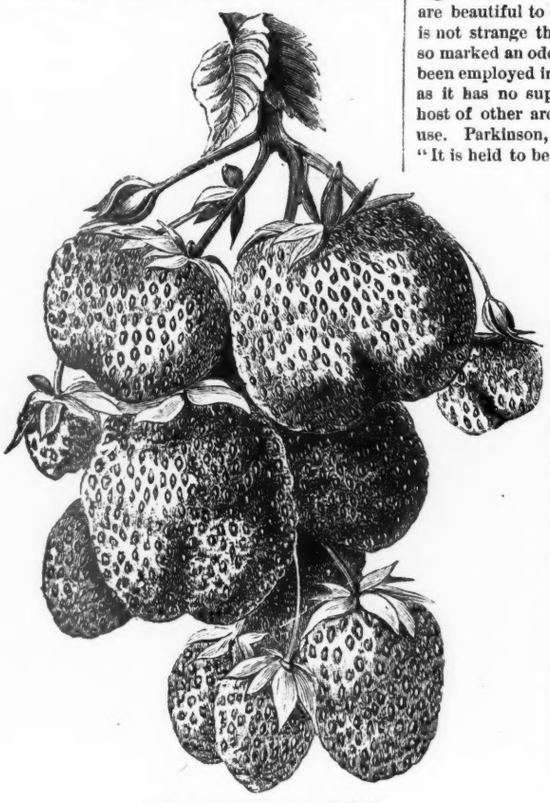
Fig. 7.—EVAPORATOR.

The Sharpless Strawberry.

Among the berries of recent introduction, the *Sharpless* appears to have stood the test of last year's cultivation in a very satisfactory manner. It is certainly a remarkable plant in its foliage, the leaves on even very young plants being enormous. This fact must be borne in mind in planting it, as it must be given abundant room if one expects to grow large fruit. Some of the large varieties produce a few very large berries on a plant, but what is wanted, is large crops of large berries, and from what we have seen of the Sharpless, it looks as if it would not disappoint us in either the size of the berries, or the number of them. To judge of the value of a variety, one should see the fruit on the plants. A few selected berries from a large bed, give no idea of what was left behind. Mr. E. P. Roe gave us last year a photograph of the whole produce of a little vine, which had been set in his grounds at Cornwall-on-the-Hudson, only two months before the "crop" was taken from it, and we had an engraving made of the picture. Those unused to strawberries, may think it does not tell a very large story for the Sharpless, while strawberry-growers will see in it indications of a large yield, especially considering that this is from a recently set plant, that should not have borne anything. It shows the peculiar shape of the fruit, and also its tendency to irregular forms, a character less manifest on old, and well established plants. As to quality; while we do not rank it as the very best, it is remarkably good for a very large berry, and we do not think there will be any complaints on the score of excellence. We shall look in vain for the highest quality, joined to the largest size.

The Fraxinella.

Sometimes old plants are much rarer than novelties, and such is the case with Fraxinella, which has been in cultivation for well nigh 300 years. The plant is a hardy perennial herb, belonging to the Rue Family, and is a native of Southern Europe. It has a large strong root, from which arise several



THE SHARPLESS STRAWBERRY.

stems about two feet high, though in rich soil, well established plants are sometimes three feet. The compound leaves consist of from 9 to 13 ovate leaflets, and as they bear a resemblance to the leaves of the Ash-tree, the plant was called Fraxinella, the diminutive of *Fraxinus*, the botanical name of the Ash. The flowers terminate the stem in a large, spike-like cluster 8 inches or more long, consisting of flowers of the shape shown in the engraving; the pendent character of the fifth petal, and the peculiar curving of the conspicuous stamens and styles, give the flowers an air of quaintness quite peculiar. The petals are of a light purple or purplish-rose color, handsomely and distinctly viened with dark-red. There is a variety with pure white flowers, and the two kinds together make a pleasing contrast. The plant has a very strong odor, all parts, but especially the stalks to the flowers, being furnished with glands which secrete a volatile oil; this has an odor much like lemon, but when the plant is rubbed or bruised the scent is very strong, reminding one of turpentine, and to most persons not agreeable. A well known horticulturist once told us that could he have but one perennial flowering plant it would be Fraxinella, mentioning as a reason for selecting it, that, in addition to the beauty of its flowers, it possessed such an agreeable perfume. We rather agree with Old Parkinson, who in "The Garden of Pleasant Flowers" (1650), in describing the plant, says that the leaves, etc., "are of a strong scent, not so pleasing for the smell, as the flowers are beautiful to the sight." It is not strange that a plant with so marked an odor should have been employed in medicine, but as it has no superiority over a host of other aromatics, it long ago passed out of use. Parkinson, already referred to, says of it: "It is held to be profitable against the stingings of Serpents, against contagious and pestilent diseases, and in Epileptical diseases and other cold pains of the brains"—and much more besides. The plant is really a very stately and showy one, and while we would not, like the friend quoted, give it preference over all others, it would certainly be included in any choice collection of herbaceous perennial plants. Probably the chief reason that the plant is so seldom seen in our gardens is, that old seeds are of difficult germination, though scalding is said to help them. With recently ripened seeds we have found no difficulty. It may also be multiplied by dividing the large roots. The botanical name of the plant is *Dictamnus Fraxinella*, the first is an old Greek name for this or some other plant; the meaning of the other has already been given. We should not omit one striking peculiarity of the plant; in a hot day it gives off its aromatic oil in the form of a vapor, and so abundantly that it will burn. This is best seen in the dusk of a hot day; by applying a light near the lower part of the plant this vapor will burn with a sudden flash of flame two or three feet high. It does not appear to injure the plant at all, and the experiment is very astonishing to those who have never seen it before. The formation of this volatile, aromatic oil is so rapid and abundant that a fire flash of its vapor can be easily obtained from the same bush for quite a number of evenings in succession.

THE FRAXINELLA (*Dictamnus Fraxinella*).

Fruit-Growers in Texas.

Should Texas in 10 years from now suddenly appear as the great fruit-growing State of the Union it would not surprise us. With great capabilities in a most wonderful variety of soil and climate, she has also a people who are taking advantage of these, and a vast deal in the way of tree planting and horticultural improvement is going on, of which the rest of the country does not hear. Some five years ago, the owner of the principal nursery in the Southern States told us that his largest customers were in Texas, and that the bulk of his stock went to that State. As a natural consequence societies are being formed for united effort in the promotion of fruit-culture and horticulture generally. The North Texas Pomological Society has monthly meetings at Denison, and has a membership of about 40 of the most active fruit-growers of Grayson and adjoining Counties. Its Secretary, T. V. Munson, Esq., sends us a sketch of the meeting on January 3d last, and, as some of the matters presented have a general interest, we present them to our readers. In Texas, as well as, if not more than, elsewhere, fruit-growing is at present largely

A Battle with Insects.

And this Society, appreciating this fact, proposes to act not only on the aggressive, but with a combined effort. One method will be to trap certain insects at night. The Secretary writes, that at this meeting "several styles of lamps were presented for the consideration of the Society, which will adopt the form considered best, and have enough made to supply the members, each

paying for his own. They are to be used in our vineyards and orchards at various times during the

Fig. 1.—AN INSECT LAMP.

summer, to destroy insects flying at night. We propose to coöperate in this matter, and thus more effectually abate the insect nuisance." [Mr. M. sends a sketch of a lamp, figure 1, which embodies the ideas shown in various samples, and something like this will be adopted.—ED.]

"The trap consists of a small lamp (*L*), so constructed that wind will not blow it out, placed in the center of a broad shallow pan (*P*), to which the lamp is held from upsetting from wind, by three clamps. A double reflecting shade (*s*) of tin is to protect the lamp from rain, and check the flight of insects when attracted beneath it by the light, causing them to fall into the pan. An inch of water is kept in the pan, with a film of coal-oil (kerosene) on it, for the destruction of victims. The reflection of light from the oil will attract many insects directly into the large, shallow pan.

"An atomizer was also exhibited, which is designed to throw a fine spray of some offensive or poisonous solution, through the tops of trees, everywhere among the leaves, to drive out curculio and

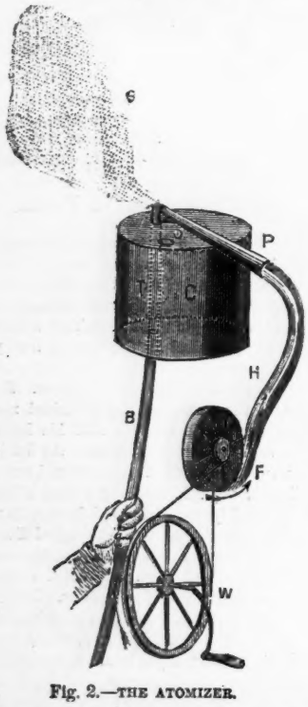


Fig. 2.—THE ATOMIZER.

codlings, kill canker worms in fruit-trees, to spray the foliage of vines, cabbages, etc.; to drive out or kill 'thrip,' 'leaf-rollers,' 'plant-lice,' etc., using strong solutions of carbolic acid, coal-tar, tobacco, or Paris green. It will far more quickly and efficiently do the work, and with a great saving of materials and labor over the force-pump commonly used for such purposes. A can (*C*) holding the desired solution, has a slanting tube (*T*), which starts on the inside near the bottom, and passes out a short distance near the edge of the top, with a small V shaped notch in side next to tube (*P*), which is soldered on top of can. This outer or top-tube tapering like a blow-pipe, has its small end just opposite the V shaped notch in tube (*T*), and about ¼ inch back from it. When air is forced through the outer pipe (*P*), liquid is drawn up from bottom of cup (*C*) through the inner tube (*T*), and blown to the distance of several feet, forming a cloud of fine mist (*S*). By attaching a hose (*H*), a power-fan (*F*) with a hand-crank-wheel (*W*), and suitable frame-work (which is not shown) to be supported on the shoulders by a strap, a continuous stream of mist can be blown; and the cup (*C*) supported upon a staff (*B*) held in the hand can be elevated and applied anywhere in the top of a tree. A bellows could be used in place of the fan. A working model of this was shown before the Society at its last meeting by the writer."—To our correspondent's inquiry we reply that we have seen no such apparatus offered, patented or otherwise; the nearest approach to it is one in which a bellows carries the atomizer at the end of the nozzle.

The Onion Smut.

A few localities in the Eastern States have long been known as the centers of the onion crop. In some of these, where the onion has been the chief crop for the last half century, the culture has, within a few years past, greatly diminished, and in some cases it has been altogether abandoned. This change is due to the appearance of a destructive pest in the form of a fungus known as the *Onion Smut*. This smut makes its appearance while the onions are quite small, and if they are not entirely destroyed, are of very little value. A careful examination of a diseased plant in the early stages of the smut, shows that the fungus consists of a multitude of small filaments, or threads, collected in knots and stringy masses within the substance of the onion leaves and bulbs. At a later period a vast multitude of dark particles are found; these are so fine that they can only be seen in a mass as a black, dusty powder. At this time the skin of the leaves becomes broken, usually in long, narrow lines, and this dust, which is really the spores of the fungus, are set free. Figure 1 shows a young onion plant with the ruptured skin, or epidermis of the base of the leaves and the black powder—the *smut*—seen in lines upon the surface. Under the microscope, each of the dusty particles resolves itself into a somewhat spherical body, upon the surface of which are numerous small projections. Two of these spores are shown in figs. 2 and 3. The Onion Smut belongs to a group, or division, of fungi better known to most farmers by the common representative, the Corn Smut. Unlike the *Rusts*, the smut fungus is not believed to pass in its development through distinct states or forms, upon widely separated plants, and, therefore, for its prevention we do not have to look outside of the onion plant. It is generally supposed that it has come from the wild onion, or garlic, and, therefore, in the extermination of all such wild plants in the region a remedy may be found. The spores of the smut being very small, may cling to the surface of the onion seed and be planted with the onions; it is, therefore, a precaution to soak the seed, that the water may remove the spores from their rough surface. When the smut has been allowed to perfect itself, the soil is more or less filled with the spores, and gives truth to the expression among afflicted onion growers, that "the disease is in the ground." The question of ridding the soil of the onion smut resolves itself into simply this: "How kill the spores therein?" Manuring the land, and giving it the highest culture and continuing the growing of onions will not do it. It *may be* that by so doing the smut will not be very troublesome, simply because strong, healthy plants are better able to withstand its attacks. This is a law which holds good with diseases in general: the better the health; the more vigorous the subject; the greater the vitality, the less disposed is the subject to disorders. But this is not the best way to treat the onion fields that have been *smutted*, because they are usually already under good culture. There seems to be but one way—cease growing onions on the land for a term of years sufficient to exhaust the vitality of the dormant smut spores in the soil. Grow other crops, and in the course of four or five years the smut spores will have died. At present the trouble is not widespread, and knowing the fatal nature of the pest, every precaution should be taken that its limits be not extended. Those buying and selling seed should bear this in mind, for a little care in not taking seed from a smutty locality, may make thousands, if not millions of dollars, difference in the great and growing onion interest of our country.

Fig. 1.

Fig. 2.

Fig. 3.

Greens For Everybody.

The real value of all food is not to be judged by the amount of nutriment it contains. Many of the green vegetables we consume contain so little of actually nourishing matter, that if one were confined to a diet of them, he would soon starve, as the digestion could not extract from them enough to sustain life. Still, their utility as articles of food is not doubted, and the very general desire for them, especially in spring, when most persons have been long deprived of them, is sufficient evidence that they are needed, did not physiologists tells us that the salts they contain are required by the system. Many, especially farmers, depend upon various wild plants for their first greens. The boys are sent over the meadows for Dandelions, to the brook sides for "Cowslips," as the Marsh-marigold is improperly called in this country; besides these, Nettle, Dock, Poke, Milk-weed, and numerous other wild plants, are used as pot herbs. Indeed, almost any plant that has no unpleasant taste and no injurious properties, and will cook tender, appears to be used in some part of the country. It is rarely that a farmer raises anything to serve as greens, unless he may have kept his cabbages in a cellar, and has saved the stumps to set out in the spring to give a crop of sprouts, and very good indeed they are. The trouble about the wild supply of greens is the time it takes to gather them, and the uncertainty of finding them when wanted. Moreover, they are generally not so tender as the more rapidly grown products of the garden. There is, perhaps, no useful plant seen in farmers' gardens so seldom as Spinach. During the past mild winter there has been hardly a day that it has not been abundant in the city markets, and in a mild winter like the past it may be had almost daily on the farmer's table, while in ordinary winters he can have it whenever the snow is off and the ground thaws. For this early supply the sowing must be made in September, and it is well to "stick a pin" just here in the memory, to make a sowing. Our object at present is to urge a spring sowing. While the crop from this will not be so early it will be most acceptable, and vastly superior to any wild plant, and those who become accustomed to it now will be sure to prepare next fall for an early supply next spring. Sow the seed in the richest soil in the garden in drills 15 inches apart; as it is a hardy plant the seed may be sown as early as the soil can be worked. In two weeks make another sowing, and two other sowings at intervals of a fortnight will not come amiss; this will bring the latest sown into hot weather when it soon runs up to seed and other things take its place. When the largest leaves of the spring

sown are 2 or 3 inches long, pull or cut out for use where it is thickest, and what is left will grow all the more rapidly. Farmers who live near markets will find spinach a profitable crop, especially that which has been wintered, though the spring sown will pay fairly. In ordering seeds do not forget a paper of "Spinach Beet" and of "Improved Dandelion." The first named is to be sown like beets to give greens during the hot summer; by cutting the outer leaves for use, taking care not to destroy the central bud, it will give a continuous and abundant supply of most excellent greens. The dandelion is to give greens early next spring. It must make a season's growth to get strong roots; these are to be thinned, or better, transplanted to a foot apart, and next spring they will give an abundant supply of greens as much better than the wild plants as one can imagine. Try it!

The Honey Locust Hedge.

Having described the Honey Locust last month, we now consider the method of making a hedge. One can start with the seeds, or purchase young trees from the nurseries. Of course it is cheapest, so far as outlay is concerned, to begin with seeds. If one can afford to buy the plants he will gain a year, or perhaps two, in making the hedge.

Sowing the Seeds.—In our only experience with them, the seeds had been kept all winter in the pods; they were taken from the pods and sown at once, coming up as readily as beans. Purchased seeds may have become too dry, and it will be safest to soak them by pouring on warm water and allowing them to remain in the water for about 24 hours. A seed-bed of good light soil should be prepared, and the seeds sown as if they were beans, dropping them about 3 inches apart in the drill. The rows, if to be worked by hand, may be 15 inches apart, and twice that distance if a horse cultivator is to be used. During the season the young trees are to be well cared for by working between the rows and pulling up the weeds that appear in the rows. If any plants are crowded by too thick sowing, thin them while quite young.

Setting the Hedge.—Usually the plants will be large enough when one-year-old, but if they have not made a strong growth they may be allowed to grow another year. Nurserymen furnish the plants at one or two years old as may be desired. The first thing to be done with the plants, whether home-raised or purchased, is to assort them according to size, making two or three sizes. The object of this is to secure uniformity in the hedge; if a small plant is set between two large ones, the larger plants will keep the advantage, and there will be a weak place in the hedge. Besides assorting, the plants must be prepared by trimming, cutting back the long tap-root, and shortening the tops by cutting off the main stem and larger branches about one-half. This is very important, the object being to make the plant branch near the ground, which it will not do if the tops are all left on. In these operations, do not expose the roots to the air more than is necessary. The line of the hedge should be well plowed, and harrowed, but no manure will be needed; it should be a well prepared bed about 4 feet wide, in the center of which the hedge is to be set. It is very important that the hedge be set straight, and this can be best secured by stretching a line as a guide in planting. The plants are to be set 8 inches apart, and may be put in with a dibble, a large trowel, or by opening a cut with the spade, whichever method the planter may be most familiar with. A proper hedge—thick at the bottom—can only be made in four or five years, and it must have each year a severe cutting back, which should begin the first fall, cutting the plants back to a hight proportioned to their growth. But of this it is not our purpose to treat at present. To answer some inquirers, we may say that in localities where the Osage Orange is perfectly hardy, we should prefer it to Honey Locust, on account of its greater beauty if for no other reason; but there is a wide belt where it is uncertain, and still another where it will not endure the winters, and in these the Honey Locust is the most available of all hedge plants thus far tested. It has been objected that the Honey Locust is not suited to hedge-making because it is naturally a large tree, and can not be dwarfed without injury. The objection is entirely without weight, as we know that it has been in successful use for over 30 years; besides the same applies to the Osage Orange which, when it has a chance, will grow to a tree 60 feet in hight.

Peas in Plenty.

"This is not a pea country," said an Englishman to us, and he was right, it is not in the sense that England is, where they can take picking after picking from the same vines. The hot sun that gives us our green corn and tomatoes, which English gardens cannot have, puts an end to our peas. But we can have them in abundance during their short season, and should have them in far greater plenty than we do. Farmers are apt to be content with two or three messes, and many find it too much trouble to grow them at all. One great obstacle to an abundance of peas, is the necessity for sticking or brushing them, but that, as we shall presently show, may be for the most part avoided. The great point with early peas is to start early; select a piece of light, dry soil, all the better if it slopes to the south, and just so soon as it can be worked, plow and harrow it, furrow out rows at least 6 inches deep, 3 feet apart for dwarfs, and 4 feet for the taller kinds. Then scatter a good supply of the best and finest manure in the furrow, and sow the peas upon the manure, if well rotted; if not, cover the manure with an inch or so of soil. Then by the use of the rake or hoe, cover to the depth of 3 inches. Some cover only an inch at first, and as the plants show themselves, gradually draw in the earth, until the seed is 4 or 5 inches deep; the deeper, the better the plants will stand hot weather.

Varieties.—One who looks at a catalogue, finds a puzzling list of names, and it may help him to know that for the earliest peas, there are several names for what is essentially one and the same pea. Those not familiar with the matter, should know that there are two kinds of peas, the round and the wrinkled, and that there is as much difference between them in quality, as between field corn and sweet corn. The earliest peas are round. The wrinkled peas, if wet weather comes after sowing, will rot in the ground. Then again, there are dwarf and tall sorts of both kinds; the dwarfs are a foot or less high, the others grow from 2 to 5 or more feet. It need hardly be said that the tall kinds produce more from the same land, as they have the most vine; though the dwarfs may be planted closer, they, so far as our experience goes, are not so satisfactory as the others. Great claims are made for some of the newer dwarfs, that we have not yet tried. For general use, "Daniel O'Rourke," and "Carter's First Crop," are the best very early. Then comes "Alpha," the earliest of all the wrinkled peas. For the main crop, no pea is better than "Champion of England," and probably none ever will be. This should not be sown until the ground is dry and warm, or the seed may rot. "Bishop's Long Pod" is intermediate between the early and "Champion," but a second sowing of "Alpha," a fortnight after the first, will do well for an intermediate crop.

About Brushing.—None of the market gardeners brush their peas, and while we would give brush or other support if practicable, as affording better crops, and easier picking, yet one should not go without peas because he cannot stick them. When the peas come up, the ground should be kept clean with the horse cultivator, or garden plow, and if any weeds come up in the rows, pull them out; when the peas are about 6 inches high, throw a furrow with a small plow towards them on each side. When they begin to fall over, turn them all to one side, and let them lie on the ground. Every two or three days, turn them over to the other side of the row, especially after a rain; this is done very rapidly by using a hoe-handle, or similar stick, running it under them, and turning over several feet of the row at once. The "Champion of England" should, if possible, have some kind of support, as that is longer in growing, is taller, and yields more pickings. If brush cannot be had, use cord or wire stretched between stout stakes or posts.

Pop-Corn and Its Varieties.

For some reason there have been of late an unusual number of inquiries concerning Pop-Corn. These come in part from those who would cultivate it for their own use, and in part from those who, having an impression that it is especially profitable, would engage in its culture as a business operation. As to this aspect of its culture—its profit, it is difficult to get at statistics, but from the fact that there are some persons who raise it year after year as a regular crop, we infer that it pays somewhat better than ordinary corn. As with all articles of produce, the supply of which is not regular, the price varies a great deal, it being some times twice or three times as high as at others, and those who grow it regularly, by taking advantage of times of scarcity, may make it pay in the long run. As to its culture, it is scarcely different from that of ordinary corn, but being smaller, may be planted closer. A light, warm and dry soil, and some stimulating fertilizer give the best results. It is most frequently sown in drills, which are 30 inches apart, and the stalks 15 to 18 inches apart in the drill.

Fig. 1.—"LARGE POP."

The Varieties.—There are but four recognized by dealers, though occasionally others are met with, but do not appear regularly in the market. The leading kinds are "Large Pop" (fig. 1), "Rice" (fig. 2,) "Shaker" (fig. 3), and "Maynard" (fig. 4.) The first and third are the same so far as the size and color of the kernel go, but the "Large Pop" has 10 rows and a longer ear, while the "Shaker" has usually but 8 rows. The "Maynard" is 16-rowed, with much smaller kernels, which are whiter, and of a pearly appearance.

Fig. 2.—THE "RICE."

The "Rice" corn has very sharp-pointed kernels, giving the ear a peculiar ridged appearance; the rows, usually more or less irregular, are about 16, but often break up and run into one another. The diagrams give the real as well as the comparative size of the kernels and ears. As to which of these is best, we are unable to say; more seems to depend upon the condition of the corn than upon the variety, and those who are in the pop-corn business, always test the samples and purchase that which suits them without regard to variety. In popping samples of each, we could see

Fig. 3.—THE "SHAKER."

Fig. 4.—"MAYNARD."

scarcely any difference in quality. The yield, with a good crop, is said to be about as many bushels of ears of pop-corn as the same land would produce in bushels of ordinary shelled corn. It is always sold in the ear, and by weight, the price varying from one cent up to three cents per pound, but occasionally, when there is a scarcity, the price is considerably higher. The crop is not one to be commended to those who are in a hurry for the returns from their labor, as it can not be sold until it has been kept several months, and it is all the better if it has been kept for a year. The ability to pop is not fully developed until the corn is thoroughly seasoned. The drying may be hastened by artificial means, as we have had corn pop well when kept in a warm room for only two months after harvesting.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Monograms For Needle Work.

A mark of ownership upon any article of clothing is an important item when the garment is lost and it is desired to find the owner. Again, in sorting the clothing as it comes from the wash, a mark of some kind, easily found, but not too conspicuous, is a matter of practical value; in fact, there are sufficient reasons why all underclothing should bear its possessor's mark or name. There are very many ways of marking clothing, from a single letter stamped or written upon the fabric, or a simple stitch of thread, to the most elaborate designs worked with great care and ingenuity. To those persons who have a fondness for fine needlework, the designing and working of monograms furnishes an agreeable occupation. Some monograms are given in the accompanying engravings, not expecting that they will be just the initials for many of the readers, but rather as samples to serve as a guide—to suggest how designs may be made and the work done. The chances are only one in several thousand that any given person's initals are as shown in figure 3. The size of the monogram, and the color and quality of the thread used in its construction, and other like matters, will depend upon the kind of garment, nature of fabric, and "last, but not least," the taste of the designer.

Fig. 1.

A Burlesque Art Gallery.

At a fair for charitable purposes that the writer recently attended, one of its most popular and attractive features was an Art Gallery—an "annex" to the main show, as it would have been called in the Centennial year. There was just an even hundred "works of art" on exhibition, all going to show the duplicity and flexibility of our language, and the ingenuity of the "artist." For example, when a "View of Paradise" is announced on the catalogue, one's thoughts turn to some grand sight of a celestial city, but what he really sees is only a *pair of dice*. There has been much excitement over contests in swimming during the past year, and to see one must, of course, be well worth the price of admission to the gallery. "The Swimming Match" had but an ordinary glass of water in which to swim, and we wonder how it will "go off" when it comes to the "rub." "A Bridal Scene" was soon in full view, and for the moment it reminded one of a harness shop. "The Skipper's Home,"—a snug little cottage by the sea as we had always been told, proved to be only an ordinary slice of a very ordinary cheese. "Sweet Sixteen" excited much interest among the young men present. They were shown a collection of four times four lumps of cut sugar. Several dead mice proved to be "A View of the Catskills." The "Maid of Orleans" is a person for whom our historial reading had given us a very high appreciation. She was here *sweet* in character, but not so white as more *pulling* would have made her. Of course the lass was candy from (New) Orleans (Mo-lasses). It is said that one seldom sees "A Perfect Foot," but here was one with all the inches, halves, quarters, etc., marked upon it, and yet looking at it one would think such a foot was the *common rule*. It was with some surprise that we saw it was announced that there was an "Eclipse of the Sun," as the almanacs had not foretold it, besides it was evening, but this did not prevent a black cloth from obscuring the view of a copy of the "New York Sun." "The Great American Desert" was the title of the next picture presented to the view of the lovers of nature and art. This was art in the form of a Pie! One of the neatest thing was a new version of the old song, "Coming Through the Rye." Three little artificial mice with their heads just sticking out of a loaf of rye bread. A pumpkin shell with a five-cent, toy time keeper upon it had the high sounding title of "The Watch on the Rhine." The pile of hinges, screws, knobs, bolts, etc., were all "Things to Adore," and "A View of Boston," that home of wisdom, was presented in the central portion of a wheel, *The Hub*. "The Missing One" was a mystery to us until looking all around a large pasteboard *unit* was seen above our head. We can by no means go through the whole list, but as this is the presidential year, we close with "The Two Candidates." We did not make a choice, Dates being sufficiently sweet without being candied. These extracts from the catalogue of the Burlesque Art Gallery are given to afford a hint to those engaged in the management of fairs, etc. Such an exhibition, when well carried out, is capable of affording a vast amount of innocent amusement, and may be made to add essentially to the receipts with a very small outlay. It should be in the hands of those who have sufficient ingenuity to present a fresh lot of pictures, as many of the "old masters" have become badly worn by long use.

Fig. 2.

Fig. 3.

Household Notes and Queries.

THE MOTHS.—A word in season, is the one that tells. This is not the month for moths, but it is getting so far along towards the time when the precautions should be used, that in giving them now, many will be saved the trouble of writing to ask what to do with their robes, furs, etc. As strange as it may seem, we meet with intelligent persons, who do not understand the changes in insect life—all should know that we have first the egg; then the larva—some kind of a caterpillar, maggot, or grub, something of the "worm" kind; this then goes into the pupa, or chrysalis state, remains quiet a while, then comes out as the perfect insect—either butterfly, moth, beetle, fly, or whatever its kind. In the clothes-moth it is the larva, the caterpillar, that does the mischief; its perfect form is popularly known as the "Moth Miller," and in due time will be seen flitting about the house. Now the trouble arises from allowing this parent-moth to deposit her eggs upon or in the fabric, which afterwards furnishes the food for the young "worms." Prevention is thus seen to be the most important remedy. Hence various things that are distasteful to the mother moth, and not injurious to the furs, woollens, etc., are in frequent use to keep the moths away. Of such are Camphor Gum, Cedar Shavings, Pepper, Tobacco, etc., sprinkled on the fabrics. But the best and surest method is, to put the goods away in a place—a box, barrel, or even paper bag—where the moths cannot enter—and pack the goods in it before there is any chance for the eggs to be laid.

Fig. 4.

HOUSEHOLD ACCOUNTS.—There are reasons why the wife or house-keeper should keep an account book. In the first place it would furnish interesting information of the number of pounds of sugar, spice, flour, meat, etc., that a family of a certain size consumes. How many know anything definite about these things! Again, such a record would suggest changes in the living in one way or another, and furnish a basis for calculation of the requirements for the coming year. We knew of a lady who went so far as to keep an account of the number of extra meals which she furnished in a year; and when it was announced the family were greatly surprised. A household account is a startling revealer of facts. As a matter of family history, a record should be kept—of course, the dates of births and deaths will be given in the Record to be found in the family Bible, but there are other things that transpire in a family worthy of note.

RENDERING BOOTS WATER PROOF.—The snow and water of winter will get through the leather of most boots, and anything that will aid in making them impervious, is of importance. There are various compounds employed, one of the best and oldest of which is made thus: A pint of Linseed Oil and 4 ounces Powdered Rosin are melted together with 8 ounces of Tallow, if of mutton all the better. They should be melted over a slow fire, and as the mixture cools stir while it is hardening. This preparation is to be applied to the boots, melting it with a gentle heat, applying while still liquid, and rubbing it in before the fire.

VACCINATION.—It is proper for us to call the attention of parents to this important operation, which should be performed upon every child. Vaccination is a simple matter, quickly done, but nevertheless of such moment that it should be attended to at once, and thus ward off an attack of that dreadful disease—the small pox.

BAKED PORK AND BEANS.—A request comes from a Virginia house-keeper that we tell how the "Boston Baked Beans that are sold in the stores are prepared." We have had no experience with store baked beans, and do not know just how they are cooked, but for the best way to cook Pork and Beans in the New England style (we never could see the propriety of the prefix of Boston) we may help her. Do not expect to find it in a Cook Book; there are as many ways as there are books, and neither of them *the* way—which is our way. Beans, some; Pork, a piece, and a pot or pan big enough to hold them are required. Pick over and wash the beans, cover them well with water, and let them soak all night, or longer. Place the beans in a pot or saucepan, cover with water, and heat slowly; when simmering shows an approach to boiling, pour and drain off the water; cover again with hot water and boil the beans slowly until done. The pork, selecting a rather lean piece, is to be boiled in a separate vessel, while the beans are boiling. When the beans are so soft that they crush readily between the fingers, place them in an iron or tin pan, or an earthen bean-pot; remove the rind from the pork; score the top of it both ways into half-inch squares, and press it into the beans, the top of it only exposed; put in the water in which the beans were boiled, more or less as they are wanted moist or dry; the quantity varying with the kind of beans, is to be learned only by experience—nearly to the surface of the beans will answer for a first trial; put into the oven and bake slowly, at least 5 hours—6, or more, will do no harm. Variations which may be tried: A tablespoonful or two of molasses put in the pan with the beans gives a fine color and a flavor liked by most persons. Sprinkle a little pepper with the beans. Ordinarily the upper layer of beans will be browned, and often hard and parched; to prevent this, place slices of raw potato over the beans, but

not on the pork. Leave out the pork altogether, salting, and putting in a tablespoonful or two of beef drippings. Variations *not* commended: Boiling the beans without first soaking; boiling them without changing the water; boiling the pork with the beans; baking the pork without first boiling; using the pork with the rind on. In the days of brick ovens the bean-pot was put in towards night, and taken out the next morning. Those WERE pork and beans! At the present day such can only be found where the bake-pan and wood fires prevail, or in lumber camps. In either place the beans and pork are put into the bake-pan, and this completely covered with coals and ashes. Taken out in the morning! Talk about "Boston Baked Beans!"

The Uses of Apples.

However we may esteem other fruits, the apple is the main reliance in late winter or early spring, as there is little else in the way of fresh fruits. For cooking, no fruit is equal to the apple, which is susceptible of being served in a great variety of acceptable forms, some of which are here suggested.

APPLE SAUCE is the form in which the fruit most frequently appears. There is apple sauce, and apple sauce. To make the best, requires the best apples. Select high flavored fruit, such as the R. I. Greening, or Spitzenberg, pare, and slice in thick slices, and put, with the needed quantity of sugar, in a dish with a tight fitting cover. Some have a dish made for the purpose, but a tin pail with a good cover will answer. Set in a moderate oven, and allow it to stew slowly, until thoroughly done; good apples will need no water. Apple sauce so prepared, is far superior to that made in the usual way....Next in popularity to apple sauce is,

APPLE PIE.—Stewed apples half an inch thick, between two flabby crusts, is a caricature on apple pie. *The* apple pie is made with sliced raw apples, in a very deep plate, and as few plates are deep enough, the sliced apple should be heaped up in generous measure. It is a mistake to spoil good apples with much seasoning. Cloves and allspice overcome the natural flavor; a very little cinnamon, or minute bits of the dried peel of a sweet orange, develop it. In many families, sauce and pie end the changes, while they are really but the beginning of the list. What can be better for a dessert, than

BAKED APPLES.—Either sweet or sour? Many have a notion that sweet apples are the only kinds proper for baking. They are indeed excellent—when sour ones cannot be had.—But for the perfection of baked apples R. I. Greenings are required: Remove the centers with a "corer," fill the cavities with sugar, set in a baking dish with a little water, and bake rather briskly. Apples so treated, are better than most of us deserve; but if we add, as they are eaten, a liberal supply of Jersey cream! ....It is but a step from apples to

APPLE DUMPLINGS.—That person is not to be envied, whose recollections of childhood does not include apple dumplings—"such as mother used to make." That kind will never be found again, but a fair approach to it may be hoped for. Her's were both boiled and baked, and we never could tell which were best. Isn't the making of the crust for boiled dumplings a lost art? Well, we can manage baked ones, and there is less risk of failure, and consequent danger to the digestion.—"Both kinds of sauce if you please."

APPLE CUSTARD is not to be omitted. Pare and core the apples, stew in very little water until tender; pour over them a custard made in the usual manner, and bake until the custard is done. Housekeepers find it difficult to select a pudding-dish large enough for this.

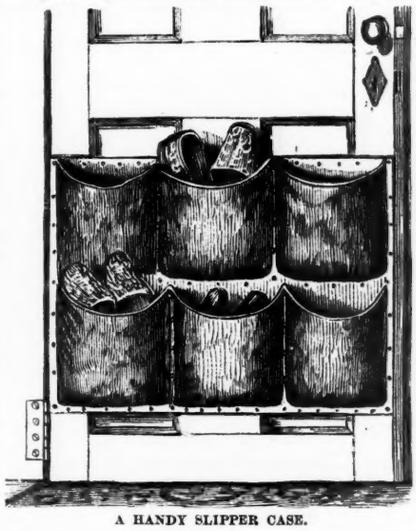
APPLE FRITTERS are much liked by many; Rather large slices of apples are sprinkled with sugar and cinnamon, allowed to lay for an hour or so; they are then dipped in a batter of flour and eggs, and fried in an abundance of very hot fat; for these, a wire frying basket is very convenient. They are drained for a few minutes, and served hot. If for dessert, they are dusted with powdered sugar when served, but if, as many prefer them, to be eaten with meat, the sugar is omitted.

BROWN BETTY.—We gave this several months ago, and will only briefly repeat. All the clean bits and fragments of bread are dried crisp in the stove oven with the door open, then rolled, and bread-crumbs are always at hand. Sliced apples, bread-crumbs, sugar, cinnamon, and a deep pudding dish. A layer of apples, sugar, spice, crumbs; apples, sugar, spice, crumbs, and so on until the dish is full. Bake.

PAN-DOWDY OR APPLE SLUMP.—Since wood-fires and the old bake-pan or skillet, with a cover to hold coals on the top, went out of fashion and use, an "apple slump" has not been possible. An imitation is made in a deep pan, and baked in an oven, but it is only a baked apple pudding. Probably the real thing can still be found in the lumber camps, and in the few other localities where wood is the fuel, and the open fire-place has not given way to the stove. The apples are quartered; the bake-pan is lined at the sides with a crust; apples are put in, packed solidly, some spice is used, and sufficient molasses, or part sugar, and part molasses, to sweeten; a top crust is put on, gashed to let the steam escape; the pan is set on the coals, and the coals put on the cover. Eaten hot with butter! Who can ever forget it! The side crust baked before the juice came from the apples; it then became partly penetrated with syrup; the apples were done to a rich crimson mass. Talk about apple meringues, and such flummery—Here was richness!

A Slipper Case.

Next to the comfort of slippers is the convenience of a place to put them when not in use. It, with some



A HANDY SLIPPER CASE.

persons, costs in trouble about all that the comfort is worth to find their slippers, they having been left where they were taken off, or thrown into a dark closet, to become buried beneath a host of other things. The engraving shows a case for holding slippers, light shoes, etc., that may be constructed of any heavy cloth and nailed to the inside of the closet door. A case thus made and located is always ready for use, always out of the way, and a great comfort to those who use it. As it takes but little time, skill, or money, to make such a handy receptacle, it is almost a wonder that there is not one in every house, not to say one on every closet door. Slippers are articles that are so apt to get astray unless they have a place, and always wanted when one is tired, that it is a pleasure to be able to put one's hands on them even in the dark; and all this may be gained by having a hanging case, like the one here given, and then using it.

Selecting Wall Paper.—It is getting the season of the year, when the house is to be cleaned, and very likely one or more of the rooms will need re-papering. The general aspect—feeling so to speak—of a room, depends so much upon the paper on its wall, that the work of selecting the paper is an important one. It is to some extent a matter of taste, but there are general rules of taste.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

As boys in different parts of the country do not all have the same amusements, there may be some boys who will read this who have never amused themselves (and broken windows) by throwing stones with a sling. The way I used to make a sling was to get a piece of leather from an old boot-leg and cut it in the shape of a long oval—much like two eggs, with their large ends placed together, and about that size, or rather smaller. To each end of this leather, attach a strong twine or cord, two feet or more long. In one of these cords make a loop, and the sling is ready. To use it you need some smooth pebbles. Place the loop in one cord over the fingers of the right hand, bend the leather and place a stone in the center, hold both strings between the thumb and finger, and give the sling a rapid whirling motion. At just the right time, and when the sling is whirling rapidly, let go of the strings and off the stone will go to a great distance; the loop being around the fingers allows you to hold on to the sling. The skill consists in letting go the loose string just at the right time. When this is properly done the stone will be sent surprisingly far. As the sling was whirled with a rapid motion, the stone had a tendency to fly off, but it could not go while both strings were held, letting go one, off went the stone, the farther the more rapidly the sling was whirled. It

Fig. 1.

is one of the laws of motion that a body moving in a curved or circular direction tends to go off in a straight line. The force which causes it to do this is called

THE CENTRIFUGAL FORCE,

a word which means to fly from the center. In the sling, the stone has a tendency to fly off, but it is held by the leather and can not go until you let go of the string. When you attach a ball to a string and whirl it about your head, you know very well what will happen if the string breaks. Illustrations of Centrifugal Force are seen when you set a grindstone to turning so rapidly that the water will fly from the surface, or when a fast driver on a muddy road spatters you with the mud that flies from the wheels of his carriage by this same force. If you whirl a parasol as the boy in figure 1 is doing, the same force will cause the ribs to fly apart and get as far from the handle as possible. A most important application of Centrifugal Force is seen in

THE GOVERNOR OF A STEAM-ENGINE,

the regular movement of the machinery being due to it. The manner in which this operates is shown by the little affair seen in figure 2, which is a round stick with two shorter sticks attached to it at one end by a bit of leather. If this be twirled in the fingers to give it a rapid rotating motion, the side pieces, or arms, will fly out, and if the motion is fast enough they will take a horizontal position. In the steam-engine the Governor consists of two rods with a heavy iron or brass ball at the end of each. They are so arranged that they will be moved by the motion of the engine, and are connected with a valve in the pipe, which supplies steam to the cylinder of the engine in such a manner that when they raise they will shut the valve and diminish the supply of steam, or if they fall below a certain point they will open it and give the engine more steam. When properly adjusted they will keep the engine at a steady, uniform speed. There are a

Fig. 2.

great many kinds of Governors in use, all having the revolving balls, but differ greatly in the manner in which the effect of their spreading by Centrifugal Force is applied to the machinery. You can illustrate another

APPLICATION OF CENTRIFUGAL FORCE

by attaching cords to a cup or basin, as shown in figure 3. It will be safer to use a tin vessel for this. Having ar-

ranged the strings, which may be easily done by putting a short cord or a wire around the dish, and attaching the

Fig. 3.

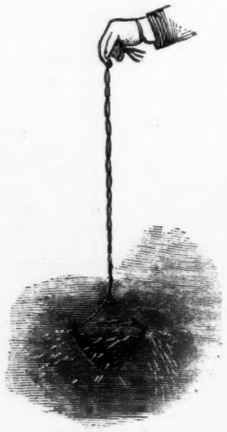


Fig. 4.

other cords to that; fill the cup with water, twist the strings together as in figure 4; hold up the cup and watch what takes place. As the cup revolves by the untwisting of the strings, the water, following the law of centrifugal force, will try to get as far from the center as possible; it will at first become hollow on the surface, and so soon as the motion is swift enough will be thrown over the rims to such a distance that may make it pleasanter to hang up the cup than to hold it. This tendency of water to fly off from bodies in motion is made use of in factories and bleacheries where they have large quantities of cloth and yarn to be dried; the wet materials are placed in a cylinder of wire gauze, which is made to revolve from 1,000 to 2,000 revolutions in a minute. In a very short time the water is all thrown out by centrifugal force, and the material is taken out quite dry. In a similar manner much of our

Fig. 5.

HONEY IS EXTRACTED FROM COMBS.

The best bee hives now have movable frames in which the bees build their combs. When the bees have filled their cells with honey, the frames of comb are taken out of the hive, and the caps of the cells being first cut away, are placed in an "extractor," where they are rapidly whirled; the honey is thrown out by centrifugal force, and the combs are returned to the hive for the bees to fill again. The same principle is made use of in draining molasses from sugar. An express or freight train moving with great speed

ON THE CURVES OF A RAILROAD

has a tendency to fly off by centrifugal force, and you will notice that an accident from that cause is guarded against by placing the outer rail on such curves some inches higher than the inner one. The statement that a pail or other vessel filled with water may be placed upside down without any of the water running out, seems at first quite improbable. It can easily be done, provided it does not remain in that position too long. As a pail would be too large for a boy to manage, you can do better with a tin kettle, or better still, with an old fruit can. It will be an easy matter to fasten a bail to a fruit can and a stout cord to that. Then, by care, the can quite full of water may be swung around so that the mouth will be directly downwards, as seen in figure 5, and not a drop will fall out. Success with this interesting experiment consists in

Fig. 6.

PROPERLY STARTING AND STOPPING.

You should first swing it back and forth like a pendulum, increasing the oscillations until by a skillful movement you can get a rotary motion. In this, the centrifugal force has such a tendency to carry the water off in a straight line that it overcomes the attraction of gravitation. I have seen the action of centrifugal force on liquids illustrated very prettily with a glass globe, in which a small quantity of water was placed, and colored dark-blue to make it more readily seen. This was attached to gearing, which would cause it to revolve rapidly, and it was very interesting to watch the movements of the water in the attempt to obey the centrifugal force and fly off, it of course being stopped by the glass. It gathered in a narrow band as far from the center as possible, and so long as the globe was in motion staid as a narrow band (fig. 6) against the glass. Some one has made a rather amusing calculation, which shows that if the earth revolved only 17 times faster than it does now, the centrifugal force would be sufficient to overcome the attraction of gravitation; if it went around on its axis in a little less than an hour and a half, instead of taking 24 hours, all movable things would fly off by centrifugal force, the water included; the seas would become dry, and the imagination can hardly picture the consequences. But it is hardly worth while to consider how things would be if they were not as they are. Such calculations do but little good. I doubt if it will make one happier or better to know that had the builders of the tower of Babel only carried their structure to the hight of 24,000 miles, the stones, or bricks, at the top would have all gone flying off by centrifugal force. THE DOCTOR.

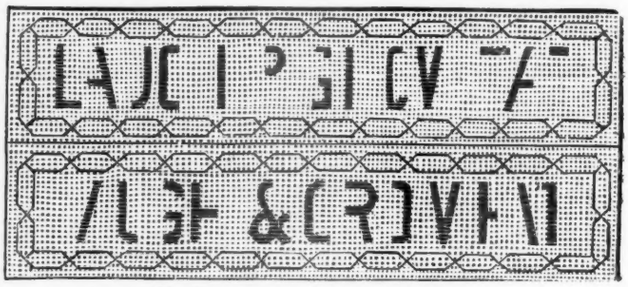


Fig. 1.—THE BRISTOL-BOARD PATTERN.

Fig. 2.—THE WHIRLING PUZZLE FINISHED AND BEING WHIRLED.

A Whirling Puzzle.

Perhaps you have done it many a time; if not, try it. Take a dry pine stick, and light one end of it; let it burn for a few minutes, blow out the flame, and a live coal will remain. Now hold this stick by the cool end, and move the other rapidly around in a circle; a bright ring of light is produced. This is due to the fact that the impression of the object upon the eye is not instantaneous, but remains for one-third of a second. During the short time of a third of a second the coal has passed through a considerable space, and therefore the

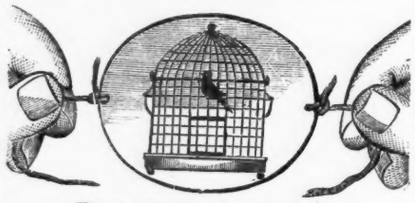


Fig. 3.—THE BIRD IN THE CAGE.

impressions in all its different positions are received and become blended into a line of light. This duration of the impression which an object makes has made many tricks, etc., possible, some of which are very puzzling until understood. Figure 1 represents a piece of Bristol board, upon which two rows of peculiar looking figures are worked in yarn. The pasteboard is afterwards folded lengthwise through the middle, so that the lines come upon the center of each side, facing outward. A string is then attached at the middle of each end, and with a binding to secure the two halves the puzzle is complete. When seen for the first time the *Thaumatrope* is an object entirely without meaning. It may be handed to a guest, with the request to read the inscription, as it was to the writer. The more it is turned this way and that way, the more puzzled and bewildered one becomes, until

Fig. 4.—THE HORSE.

the strings at the ends are caught up and the thing is set in a whirl, when the reading—motto, request, or what not—comes out as clear as *daylight* to your own *delight*.

The same principle of *optics* (as this branch of science which treats of light and eye-sight is called) is shown in various other ways; one of the most common methods consists in taking a card, with a cage drawn on one side and a bird on the other, and strings attached as shown in figure 3. The trick being to put the bird in the cage. Again, a horse is put on one side of the card in a galloping attitude, figure 4, and the rider on the other, figure 5, when by whirling, as in the other cases, the two objects *appear* together as one picture, figure 6, because, as the juggler would say, "the hand is quicker than the eye."

As such puzzles are both curious and instructive, they are worthy of a little time in construction from the youngsters. It is not one of those things that only the ingenious can make, but is within the reach of any one who can find a piece of pasteboard and the picture of a horse, a boy to put on it, and a couple of short pieces of string. The more elaborate design, given in figures 1 and 2, is for the older of the girls, which they can easily make.

Our Puzzle-Box.

SCATTERED SQUARE.

(Find the first word [and initials] scattered in the first line of the following verse; the second word in the second line; the third word in the third line, and the fourth word in the fourth line.)

We love to play where brooklets run,
And violets open to the sun;
We love along the lanes to stray,
And cull the flowers by the way.

METAGRAM.

From a word of six letters, make all the words necessary to fill the following blanks. (*Example.*—Fill the following blanks from a word of five letters. Father——me eat my——and then go to——. The word is *bread* or *debar*, from which you may get *bade, bread* and *bed* with which to fill the blanks.) ——[—— —— —— the other evening I saw—— ——run across the floor. He had a piece of—— in his mouth. I could do nothing but——at him; but—— chased him down to the ——on the——of the house. We are considered a pretty—— ——of folks, but it was a dark night, not a——to be seen; and although——"put on ——" and ran at a pretty good——, the——escaped.

Fig. 5.—THE BOY.

CHARADE.

My first is rather personal,
Yourself it may be reckoned,
And thousands of my whole 'twould take
Ever to count my second. A. S.

CROSS-WORD.

My first is in number but not in one,
My next is in planet but not in sun,
My third is in mischief but not in play,
My fourth is in morning but not in day,
My fifth is in order but not in rule,
My sixth is in student but not in school,
My seventh is in sofa but not in bed,
My eighth is in scarlet but not in red,
My ninth is in shriek but not in yell,
My tenth is in prison but not in cell,
My eleventh is in onion but not in beet,
My twelfth is in mutton but not in meat,
My thirteenth is in wisdom but not in mind:
My whole is advice of an excellent kind.

BIBLICAL ENIGMA.

The whole, composed of forty letters, is good advice, from a good book.

The 1, 17, 13, 31, 6, 37, 24, 40, was a famous well, near Gerar.

The 11, 18, 8, 27, 21, 10, 6, 2, is a place where clothing is kept.

The 15, 29, 1, 7, 9, 22, 38, 30, was a Governor of Syria.

The 18, 3, 26, 12, 34, 36, 30, 19, was a precious stone in the high-priest's breast-plate.

The 30, 35, 15, 28, 5, 20, 8, 4, is a tree, common in Palestine.

The 32, 10, 38, 23, 33, 28, 2, 3, is a spring of water.

The 39, 25, 14, 18, 12, 22, 16, 28, was a city of Asia Minor.

Fig. 6.—THE BOY ON THE HORSE.

ANAGRAMS.

1. Light may cool.
2. For tin pieces.
3. Dire ration.
4. Ice funnels.
5. But a last sin.
6. Tea-urn fount.
7. E'en singer.
8. O! I bit Missle's lip.
9. Brighten any.
10. Fool's crime.

SYNCOPATIONS.

Five letters show, if placed aright,
What many a horse does in the light;
Abstract one letter, and you've got
A bond of union, break it not.
Again a letter take and see
A liquid used by you and me.
Once more, and if the lady's *that*,
Pray make your call, take off your hat.

CONCEALED ARTICLES WHICH MAY BE FOUND ON A FARM.

1. Give me a token, Nellie, by which to remember you.
2. George, has Pa decided to buy the mare?
3. The horse has lost a shoe.
4. Get Peter a key for his trunk.
5. The buds are swelling in the sunshine.
6. This hovel might as well be torn down.
7. Pa, I like maple sugar.
8. Ben, Charlie wants you.
9. John's tools are in the woodshed.

TRANSPOSITIONS.

(Fill the second blank with the same word which fills the first blank, transposed.)

1. I asked the——to——a piece off of one of his loaves.
2. My——could not——the temptation.
3. He won the——but he was——for life.

DOUBLE ACROSTIC.

The finals form the definition of the intials.

1. An edible.
2. Dark.
3. A town in Europe.
4. Part of a shield.
5. A director.
6. A European town.
7. A lake.
8. Small.

Nip.

DROP-LETTER WORDS.

1. —m—r—s—n—e—t.
2. —a—e—o—e—t.
3. —o—s—e—n—t—o—.
4. —i—c—m—t—n—e.
5. —a—d—c—p—s.
6. —n—o—g—n—a—.

WORDS ENIGMATICALLY EXPRESSED.

(*Example.*—Man-of-war in a hurricane. *Nightingale* [Knight-in-gale].)

1. Cut our hair.
2. Part noun.
3. A remote article.
4. Benevolent color.
5. Furnish a century.
6. A number of grandees.

No. 474 Illustrated Rebus.—Something all persons ought, and may here study, to know.

BLANK ANAGRAMS.

(Transpose the italicised words in a sentence, into one word with which to fill the blank in the same sentence, and complete the sense. *Example.*—I want a cup of tea, and *Emily made it*——[immediately].)

1. Our——had to cross *a bridge*.
2. *Mamie's Ruth* suffers with——.
3. *Arlim nut oil* was used as an——.
4. *Old Gartia* was a Roman——.
5. *More shapes, Tom?* Well, I never saw such——.
6. *O! more bustle!* How very——.
7. *Even men do* sometimes speak with——tongues.
8. When we *got there* we found them——.

NUMERICAL ENIGMA.

I am composed of 10 letters:
My 3, 4, is a pronoun.
My 5, 9, 6, is another.
My 5, 1, 2, 7, is an animal.
My 6, 1, 8, 10, 5, is a very important household article.
My whole is a very useful study. B. F. O.

ANSWERS TO PUZZLES IN THE JANUARY NUMBER.

ADDED HEADS.—1. Imp—grimp. 2. Rove—grove. 3. Edge—hedge. 4. Awl—bawl 5. Ear—bear. 6. Race—Grace.

STOREKEEPER'S PUZZLE.—PAY UP; first and last letter P, P (peas); 2d letter A (anaconda), 3d letter Y (*Your* initial); 4th letter U (U. S. Grant).

DOUBLE ACROSTIC.

Napoleon—Waterloo.

N— arro —W
A— ltoon —A
P— enobsco —T
O— b —E
L— ancaste —R
E— scuria —L
O— rinoc —O
N—ew Mex'c—O

CONCEALED BIRDS.—1. Linnet. 2. Wren. 3. Dove. 4. Heron. 5. Kite. 6. Owl. 7. Hen. 8. Crow. 9. Thrush.

ANAGRAMS.—1. Beforehand. 2. Subordinates. 3. Intemperance. 4. Biographical. 5. Inoffensive. 6. Incidental. 7. Deficient. 8. Obituaries. 9. Bituminous. 10. Cylindrical.

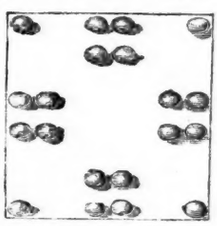
PI.—He who minds not his own business, is not fit to be trusted with other people's.

ALPHABETICAL ARITHMETIC.—7208)56319047(781. (*Key.*—Profitable.)

BIBLICAL NUMERICAL ENIGMA.—And let us not be weary in well doing.

The Pile of Winter Wood that was given in the January number proved to be of even greater interest to the young people than we anticipated. Answers from a number of boys and girls have been received with the correct and entire list. For the benefit of those who may have had some trouble, we give the list of woods in the pile. (1) Locust, (2) Fir, (3) Hemlock, (4) Elm, (5) Dogwood, (6) Beech, (7) Pine, (8) Willow, (9) Basswood, (10) Scrub-oak, (11) Birch, (12) Buckeye, (13) Cypress, (14) Walnut, (15) Maple, (16) Chestnut. With the list before you it will not be difficult to select the picture that represents each one of the kinds of wood mentioned above.

Answer to the Bean Puzzle.—The accompanying engraving makes the matter plain to all those who had trouble in putting in the four extra beans, and yet not increase the number of rows or number in each row. It will be observed, by referring to the January number, that there were two beans at each corner, while here there is only one. The corner beans are counted twice, and by removing one from each corner to the middle the count stands five for each row and allows an extra bean to be put in with the three already in the middle to make the six; the requirements of the problem are met, and what was once puzzling is now all clear.



This Is Leap Year—Why?

When the number of the year is divisible by four it is Leap Year, and such is the case with 1880. Just about the time, this, the March, number of the *American Agriculturist* reaches its readers, perhaps while thousands of boys and girls are looking over its pages, and even reading this very article, it will be the 29th of February—the Leap Year Day, that comes only once in four years. Nearly a year ago we saw a little girl then about three years old who had never had an anniversary of her birthday; but this year she will have one, and we hope it will be big enough to make up for all the misfortunes of being born on the 29th of the shortest month of the year.

"Leap Year," we have been told, "is an *odd* year;" but it has just been shown that it is altogether *even*. Why is it odd? we may ask, and the reply comes, "It is the year when the boys are girls and the girls are boys, and everything is turned around." O! yes, we begin to see! They have "leap year parties," and "leap year rides," and "leap year this and that," and the girls do the inviting, and driving, and managing, and many of the "company" things which the boys claim for their own on other and ordinary years. It is said that such matters are sometimes even carried so far that the young lady proposes to the young gentleman of her choice, and he has the privilege of accepting or refusing as he sees fit. Well! we will admit it is an *odd* year, though it is *even* all the same. But why do we have leap years? There must be some good reason for adding one day to every fourth year as it comes around to us. What is it?

The earth moves around the sun once a year, as you all have learned from your geography. The time required for the earth to pass around and return to the place from which it started is called a *solar* or sun year—the year made by the heavenly bodies. In olden times, men did not know that the earth moved around the sun. If there was any moving it was done by the sun they thought;

Fig. 1.—SLIDING.—(*See next page.*)

and it did *seem* to move. To this day we all say the sun *rises* and *sets*. Knowing so little about the revolution of the earth, it was very hard for men to arrange the divisions of time so that they would correspond with the *solar* year. The *civil* year is the one made by man, and, like many human things, it was at first very imperfect—that is, the *civil* year and *solar* year did not correspond very closely. In the time of Julius Cæsar, the two kinds of years had got so out of place that the spring of the civil year came in midsummer. To use an illustration, we will have two cog wheels that work into each other. If both wheels are in all respects alike, the same places will always come together at each revolution; but suppose one wheel is a trifle smaller than the other, the wheel representing the civil year smaller than the one of the solar year, then any points once together will keep getting farther apart. This was just the trouble between man's year and the natural year. Cæsar rearranged the civil year in 46 Before Christ, and introduced the system of having three years of 365 days and then one of 366—the additional day being given to February. The solar year is 365 days, 5 hours, 48 minutes and 49½ seconds, so that Cæsar's year of 365¼ days, averaging the four, is about 11 minutes too long. The point is to get these two years; the year of the heavens which we can not alter, and the year of the almanacs to agree. Matters went on as they had been started by Julius Cæsar, with a loss of 11 minutes a year until 1582, over sixteen hundred years, when it became evident that the little yearly loss was too great and must be remedied. How could this be done was the question. At this time a Pope took the matter up—it was a time when Popes had great temporal power—and decreed that the fifth of October be called the 15th, and all the intervening days to be cancelled. This only set matters right for the time being, but the same Pope, Gregory XIII, made it a rule that the *century years* not divisible by eight be not leap years. Thus 1700, 1800, and 1900 are not leap years, according to the new rule. This omits three leap years in every 400 years. With this arrangement the civil and solar years almost coincide,

Fig. 2.—THE ROUNDED BOARD.—(*See next page.*)

the solar, exceeding by only 22¼ seconds, or a day in about 4,000 years—a matter too small to need attention.

Those who have followed us through, and we fear it has been rather dry for the younger readers, will see that it has been quite a hard matter to bring things around straight. The leap year comes from the fact that there is a fraction of a day in the solar year which it would not be convenient to have in the civil, so we put enough of the fractions together to make a day and have the extra one on the leap year, which comes every fourth year.

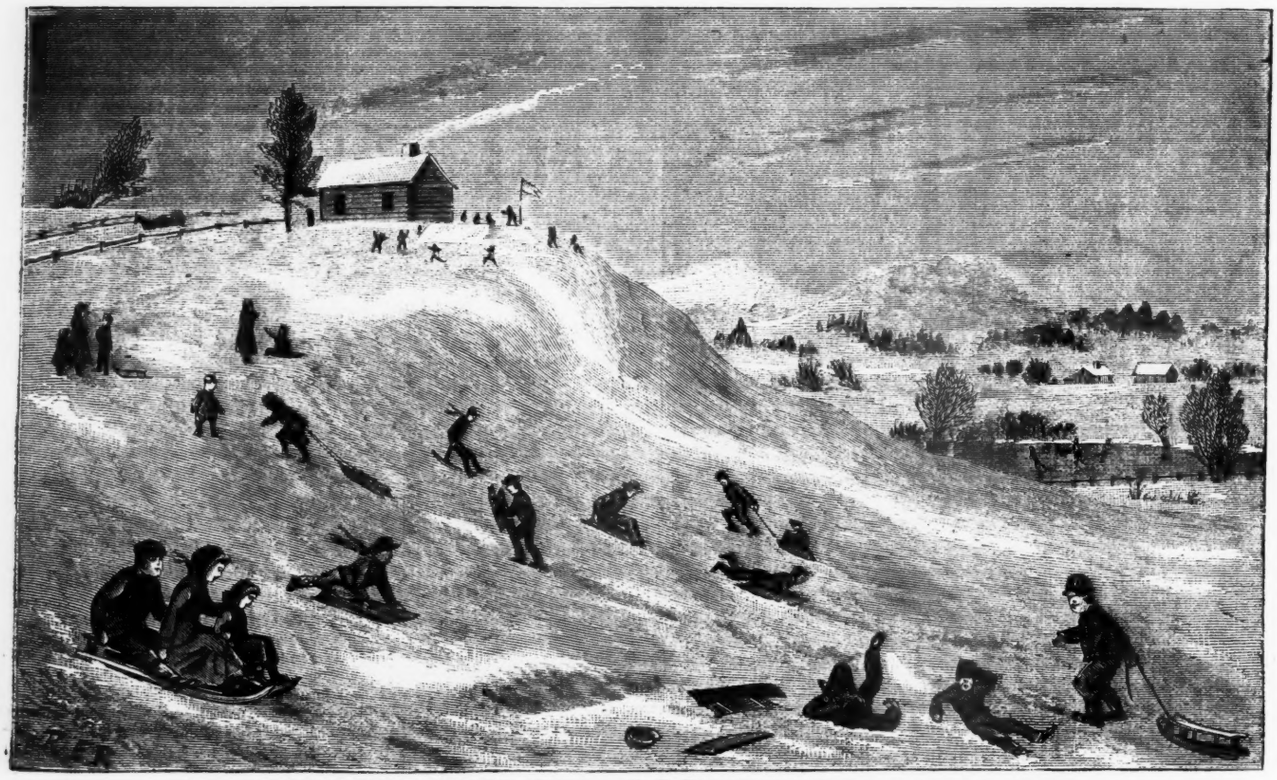


Fig. 8.—A COASTING SCENE.—DRAWN BY R. E. ROBINSON.—*Engraved for the American Agriculturist.*

Coasting.

It is as natural for a child to slide down a hill as for ducks to go into the water, or turtles to get on a log when the sun is shining, and get off very suddenly again when there are signs of danger. Boys, and girls too, try all summer to slide down something, if only a cellar door.

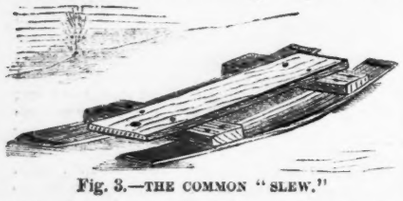


Fig. 3.—THE COMMON "SLEW."

But the old sloping cellar door has largely gone out of fashion, and with it has gone much juvenile fun; in the absence of the cellar door the youngsters take to something else, if only a dirty bank, and wear out their clothes, their mother's patience, and no small part of the bank itself, in their endeavors to have a slide. They will get a board and put it where there is some hope of a ride down its too often splintery surface; and getting their little wagon on it will go down with a shout and a smash.—Children are creatures of motion, and anything that makes motion easier is hailed with delight. Snow is just such an aid to the free movements of the child, and it is not necessary for me to say that it is the joy of their winter life. If a well boy can be kept in the house without considerable effort when the snow has come, and the rolling banks along the fences are crusted over with a coat as hard and smooth as ice, he is a different boy from any I ever saw or ever want to see. If the average boy can be kept from sliding down those crusted snow banks on his boots, as shown in fig. 1, p.109, some very strong measures have been used, or the boy was born in the tropics and he does not know what snow is for. The shoemaker

Fig. 4.—THE JUMPER.

does not want any such boys around. The desire to slide being born with the child, let us see some of the contrivances with which he accomplishes his purpose. In fig. 2, p. 109, is the simple, round-ended board, which may be of almost any length. A couple of cleats are nailed across it to serve the double purpose of keeping it from splitting and the rider from sliding off. There are certain objections to this coasting vehicle which those who have tried it will understand. If the snow is soft it does not go, but buries itself; and when the snow is hard and rough it is "rather uncertain."—Figure 3 is the "slew" made of two barrel staves set a few inches apart and fastened by cross-pieces with a strip of board upon these, running lengthwise of the staves, and making the seat. The "slew" is a low, broad runner sled, which will go either end foremost, and (when the hill is icy) sideways as well as any way; hence its name.—The *Jumper*, figure 4, is made of one stout stave, to which a bit of scantling one foot long is nailed, and upon the upper end of the scantling a board for a seat is fastened. This is not an easy thing to ride, as there is nothing to hold on to; and to a new hand, if the hill is steep, it is a *jumper* which will sometimes leave them behind. The *shovel* must come in somewhere, and let it be here, figure 5. This kind of coasting is not recommended, and many a child that has practised it remembers how much better it would have been for him if he had only left the shovel

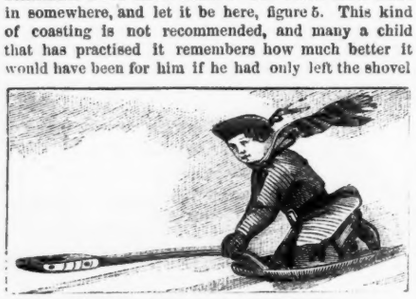


Fig. 5.—COASTING ON A SHOVEL.

alone. The *Toboggan* is an Indian sled, and is much used by them in Canada for hauling their traps, pelts, etc., and also for coasting. It is made of ¾-inch stuff 5 to 8 feet long, bent up in front like the dash-board of a sleigh. It is braced by several cross pins, and kept in shape by cat-gut strings, as shown in figure 6.—The sled that I had the most sport with was made like the one shown in figure 7. The runners were cut from "natural crooks." The beams and knees all one piece, fastened to the runners by wooden pins passing through the rave, and fitting into half-rounded grooves on each side of the beams. This is probably the best sled for the farm, when it is often convenient to draw a heavy load. In coasting it has but few equals, especially if well shod. In the large picture, figure 8, the artist has given us "The old school house on the hill." It is doubtless the hour for noon recess, the day is a fine one, and all hands are out to make the most of it. Some are building a snow fort, or defending one already made, and others are skating on the pond to the right beyond; but the most of the children are having a good time with their sleds on the hillside in the foreground. There is the large sled with the two girls in front and the boy to guide it behind. The boy who will give the little ones—too small to go alone—a ride on his large sled is doing that which will be remembered. Kind acts, like kind words, seem to live forever. Many boys prefer to have their sled all to themselves. There are such, no doubt, in the picture. Some of the boys sit upright and guide with their heels in front, while others prefer a horizontal position, and use the toes behind for steering. The older and more daring boys have fixed up a "Cajulluck" or "Thank ye marm," a bank thrown up in the course of the slide, so that when the sled strikes it the whole load is thrown into the air and comes down some distance beyond. It would seem that two boys have found the jumping a little serious, and they, and the sled too, have suffered from the toss into the air. One poor fellow has evidently hurt the back of his head, and is not getting as much sympathy from one of the other boys, who came through all right, as the conditions of the case demand. But there is another lad coming down at full speed, and if he does not look out he too will be piled upon and added to the wreck. What would these sports of childhood be without now and then an overthrow—a bruise and a break down! They are the sore spots for a while, but they become the bright ones in the memory of younger days.—If there was no toiling up the hill in order to go down again—if there were no rough places to go over, and bad places to shun, this life would not teach us the grand lessons of personal responsibility and individual power—that it does now. We must remember the influence that "all work and no play"—and "all play and no work" had on our young friend Jack.—But there goes the school bell and the scene must change. The play out-of-doors must give place for the work that is within the school-room. The horse is anxious to go on, but not so with UNCLE HAL.

Fig. 6.—THE TOBOGGAN OR INDIAN SLED.

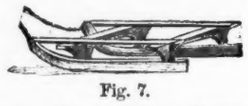


Fig. 7.

Alum in Our Bread.

A Chemical Examination of Baking Powders and its Results—The Use of Alum and its Deleterious Effects—Opinions of Medical Experts—Prompt Action of the New York and Brooklyn Boards of Health, etc.

The *N. Y. Evening Post* has been giving this subject some attention, and has published the result of some remarkable investigations, which are worthy the close attention of thoughtful people. From its recent exposure of the use of *burnt alum* in some brands of baking powders, in place of cream of tartar, the following extracts are mainly taken:—Pursuing the investigation of the quality of the food sold in this city, the representative of the *Evening Post* took up baking powder as one of the articles in most general use in our households. It is used by nearly every family in the city, and it is naturally of great importance to those who eat the food made with it to know whether it contains anything injurious to health.

There are certain constituents of good baking powder, which may be regarded as entirely free from danger. They consist of pure grape cream of tartar, bicarbonate of soda, and carbonate of ammonia. The cream of tartar unites with the other two ingredients, and carbonic acid gas is thrown off, producing the same effect as yeast in a much shorter time. It has been found, however, that alum will also unite with the other two articles, and carbonic acid gas will be produced. As alum costs less than three cents, while cream of tartar costs more than thirty cents a pound, it is easy to see why alum is substituted for the latter by some baking powder manufacturers.

The *Evening Post's* representative obtained the following expressions of opinion as to its effect when alum is used in baking powder, from some physicians of New York of the highest reputation and ability: Dr. William A. Hammond, formerly Surgeon-General United States, of No. 43 West Fifty-fourth street, expressed himself as perfectly certain of the injurious effects of alum, whether used alone to whiten bread, or as an adulterant of baking powder. "The hydrate of alumina," Dr. Hammond said, "would certainly be injurious to the mucous membrane. It would inevitably tend to constipate the bowels and interfere with digestion; and anything that tends to render the albumen of the bread insoluble, and therefore takes away from its nutritive value, is injurious."

Dr. Sayre, former President of the Board of Health, said to one of the representatives of the New York press: "After the experiments in this line by Liebig and other distinguished chemists, and vivisectors with alum on cats, dogs, and other animals, with the published results, we may well ask what is the use of such experiments if we do not apply them to practice in the preservation of human life and health? The Board of Health should see to this." Dr. Waller, Chemist for the New York Board of Health, when asked by a *Sun* reporter as to the injurious effects of alum, replied: "You know what the effect of alum is when you take some of it in your mouth; well, that is just the effect it has upon the coats of the stomach."—The analysis of the various baking powders, as officially reported by the Brooklyn Board, reveals only two brands containing alum being sold in that city—Patapsco and Dooley's. As to the cream of tartar powders, the same report mentions the Royal Baking Powder as free from alum or any other injurious substance. There are probably more than five hundred kinds of baking powder manufactured in this country. Through Dr. Henry A. Mott, the well-known chemist, one of the most competent, trustworthy, and careful experts of this country, the following analyses were obtained, showing the presence of alum in large quantities in many of the baking powders having a wide sale. Dr. Mott kindly furnished not only the results of his own analyses, but also those of several chemists of high professional standing, including Professor Henry Morton, President Stevens Institute of Technology; Professor R. W. Schedler; Dr. Stillwell, analytical chemist, this city.

Dr. Mott's report is as follows:

Dear Sir:—In accordance with your request, I herewith embody the results of the analysis of baking powders procured during the past three months, in all of which alum was found as an ingredient:

"PATAPSCO,".....Contains Alum
(Smith, Hanway & Co., Baltimore, Md.)
"DOOLEY'S,".....Contains Alum
(Dooley & Brother, New York.)
"CHARM,".....Contains Alum
(Rohrer, Christian & Co., St. Louis.)
ANDREWS' "REGAL,".....Contains Alum
(C. E. Andrews & Co., Milwaukee.)
"QUEEN,".....Contains Alum
(Bennett & Sloan, New Haven, Ct.)
"VIENNA,".....Contains Alum
(Church & Co., New York City.)
"ORIENT,".....Contains Alum
(Crouse, Walworth & Co., Syracuse, N. Y.)
"AMAZON,".....Contains Alum
(Erskine & Erskine, Louisville, Ky.)
"GILLETT'S,".....Contains Alum
(Gillet, McCulloch & Co., Chicago.)
"TWIN SISTERS,".....Contains Alum
(Union Chemical Works, Chicago, Ill.)
"INVINCIBLE,".....Contains Alum
(Snyder Brothers & Co., Cincinnati.)
"KING,".....Contains Alum
"WHITE LILY,".....Contains Alum
(Jewett & Sherman Co., Milwaukee, Wis.)
"MONARCH,".....Contains Alum
(Ricker, Crombie & Co., Milwaukee, Wis.)
"ONE SPOON,".....Contains Alum
(Taylor Manufacturing Co., St. Louis, Mo.)
"IMPERIAL,".....Contains Alum
(Sprague, Warner & Griswold, Chicago.)
"HONEST,".....Contains Alum
(Schoch & Wechsler, St. Paul, Minn.)
"ECONOMICAL,".....Contains Alum
(Spencer Brothers & Co., Chicago, Ill.)
"EXCELSIOR,".....Contains Alum
(L. E. Taylor, Chicago, Ill.)
"CHARTRES,".....Contains Alum
(Thomson & Taylor, Chicago.)
"GRANT'S,".....Contains Alum
(J. C. Grant, Philadelphia.)
"GIANT,".....Contains Alum
(W. F. McLaughlin, Chicago.)
"QUEEN,".....Contains Alum
(Star Chemical Works, Chicago.)
"PEERLESS,".....Contains Alum
(Marden's, Rochester, New York.)
"ZIETLOW'S" SUPERLATIVE,.....Contains Alum
(New York.)
"RISING SUN,".....Contains Alum
(C. O. Strutz & Co., Chicago.)
"SIBLEY, DUDLEY & CO.'S,".....Contains Alum
(Chicago.)
"LAKESIDE,".....Contains Alum
(C. O. Perrine, Chicago.)
"FRENCH,".....Contains Alum
(Thomson & Taylor, Chicago.)
"DONNOLLY & CO.'S,".....Contains Alum
Premium Yeast Powder, (San Francisco).
"CHAMPAGNE,".....Contains Alum
(J. S. Taylor & Co., San Francisco.)

Yours, very truly,
HENRY A. MOTT, Jr., Ph. D., E. M.

New York, Jan. 5, 1879.

Having obtained the foregoing, the reporter called at the office of the Royal Baking Powder Company, No. 171 Duane street, the manufacturers of the Royal Baking Powder, a brand which the report of the Brooklyn Health Board revealed to be pure. Mr. J. C. Hoagland, President of the Company, gave the following replies:

REPORTER—"What is the cause of the present excitement about baking powders?"

Mr. HOAGLAND—"It is due to the substitution of alum for cream of tartar by some manufacturers."

REPORTER—"Have you ever used any alum in the Royal Baking Powder?"

Mr. HOAGLAND—"No, sir."

REPORTER—"But I find that it is used by others. What is it used for?"

Mr. HOAGLAND—"I presume because it is cheaper than cream of tartar, which it replaces."

REPORTER—"You would, therefore, obtain a larger profit by using alum than by using cream of tartar?"

Mr. HOAGLAND—"Yes, for a time such substitution would more than double our profits."

REPORTER—"Why, then, do you not use it?"

Mr. HOAGLAND—"For two reasons: first, the authorities on this point are so positive and conclusive that the continued use of alum in this way is dangerous to health, that we could not conscientiously use it; if others choose to take risks on the public health, we shall not follow them, preferring to continue the use of pure grape cream of tartar, which is demonstrated to be wholesome; second, our experience during twenty years has satisfied us that that which is best for the public is best for us. We can not afford to peril the reputation of the Royal Baking Powder."

REPORTER—"Can you give me any information in regard to cream of tartar, how and where you procure it?"

Mr. HOAGLAND—"Certainly! There are several substitutes or patent 'cream of tartars' on the market, made principally from terra alba or burnt bones, the latter being treated with strong corrosive acids, but the cream of tartar we use is a fruit acid—it exists naturally in the Grape—and during fermentation of the tart wines in France, it is deposited on the sides and bottom of the casks. In its unrefined state it is called crude tartar or argols, and is taken from the cask after the wine has been drawn off. Each farmer has his crop of it according to the amount of wine he has produced. This company is the largest user of cream of tartar in the world, and we have our agents in various parts of Europe collecting the crude material. It is imported into this country as argols, and then subjected to a higher process of refining, by which it is purified especially for our purposes, forming pure white crystals, which we grind to powder, and in this form we use it as an ingredient of our Baking Powder."

Other interviews were had, all to the same general effect, namely, that alum is used by many manufacturers to cheapen their powder, and enable them to undersell their competitors. Many of them are probably ignorant of the evil effects of alum on the system, while others are indifferent so long as they make money, and no one can be said to have dropped dead from taking their powder.

By this exposure of the injurious effects of alum in Baking Powder, the public must not be frightened from using baking powders when properly made. In the report of Professor Elwyn Waller, Assistant Health Inspector of New York Board of Health, on Baking Powder in 1872, the public are recommended to purchase one of the well-known brands of baking powder, in preference to purchasing the cream of tartar separately, as this substance was found in all cases to be adulterated. The inspector further states that when the mixture is made on a larger scale in a factory, and the baking powder is put up in packages ready for use, the manufacturer experiences no difficulty in securing good materials free from adulteration.

Dr. Mott, the Government chemist, in his review of the subject in the *Scientific American*, makes special mention of having analyzed the Royal Baking Powder, and found it composed of wholesome materials. He also advises the public to avoid purchasing baking powders as sold loose or in bulk, as he found by analyses of many samples that the worst adulterations are practised in this form. The label and trade-mark of a well known and responsible manufacturer, he adds, is the best protection the public can have.—HARPER'S WEEKLY.

THORBURN'S SEEDS.

Our General Catalogue of

VEGETABLE, FLOWER, FIELD AND TREE SEEDS

for 1880 will be ready for mailing early in the month.

J. M. THORBURN & CO.,
15 John St., New York.

Toes Protruding!
Soiled Stockings!
SHOE BILLS DOUBLE IN AMOUNT WHAT THEY NEED BE.

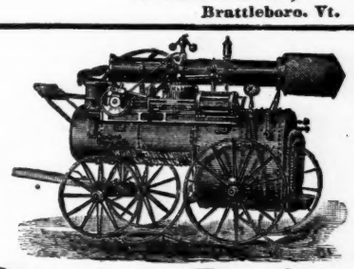
All these ills prevented by purchasing for children's wear either the A.S.T.Co

BEAUTIFUL BLACK or SILVER
TIPPED SHOES.

Everywhere known and prized for
Skill and fidelity in manufacture,
Tasteful and excellent improvements,
Elegant variety of designs,
Yielding unrivaled tones.

Illustrated Catalogues sent Free.

J. ESTEY & CO.,
Brattleboro. Vt.



Steam - Engines.

More effective and more complete, and more readily adapted to the various mechanical and agricultural uses than any other in the market. Practical improvements accumulated from twenty years' manufacturing experience, with reputation maintained and success established.

Send for Circulars, descriptive, and containing testimonials concerning our **PORTABLE and AGRICULTURAL STEAM-ENGINES.**

WOOD, TABER & MORSE, Eaton, Madison Co., N. Y.

B.K. BLISS & SONS'
HAND BOOK.
A COMPLETE GUIDE FOR
THE GARDEN & FARM
SEEDS, PLANTS, BULBS, SMALL FRUITS
GARDEN REQUISITES. 300 ILLUSTRATIONS
150 PAGES. PRICE 10 CTS.
34 BARCLAY. ST. NEW YORK.

Bliss' Illustrated Amateur's Guide to the Flower and Kitchen Garden.

A descriptive List of **2,500 varieties of Flower and Vegetable Seeds,** with explicit directions for culture, and much practical information upon the subject of Gardening. **220 Pages—Two Double-Page Chromos. 500 Illustrations.**—Price 35 cents in paper covers. Bound in cloth, $1.00.

Illustrated Catalogues of **Plants and Small Fruits** mailed free to all applicants.

PRINGLE'S NEW
Hybrid Spring Wheats,
Champlain and Defiance,
Two of the Best and Most Productive Varieties on Record.

1791 lbs. CHAMPLAIN, 528 lbs. DEFIANCE,
GROWN FROM A SINGLE POUND OF SEED.

128 Bushels to the Acre. Heads from five to seven inches long, producing from seventy-five to one hundred kernels per head.

50 to 75 Strong Stalks from a Single Grain.

Descriptive Illustrated Circular mailed free to all applicants. Price of each variety, per lb., 40 cents. 3 lbs. for $1, by mail. By express, freight paid by purchaser, $2 per peck; $7 per bushel. 2 bushel bags of either variety, $13.

PEARL MILLET.

Clean Seed, 10 cents oz., 25 cts. ¼ lb., 60 cts. lb.; 4 lbs. $2.25, by mail, post-paid; by express at expense of purchaser, 40 cts. per lb. Prices to the trade will be given on application.

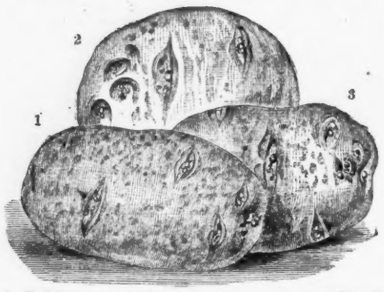
Prickly Comfrey Roots.

25 cts. ¼ lb., 75 cts. lb., by mail, post-paid, by express 50 cts. lb., 5 lbs. $2. Directions for cultivation accompanying each lot.

Dioscorea Batatas—Chinese Yam.

A valuable esculent, quite hardy, remaining in the ground over winter without protection. When cooked they possess a rice-like taste; are quite farinaceous, nutritive, and valuable for food. It is also a very desirable climbing plant. Small bulblets, in packets of one dozen, 20 cents; $1.50 per 100; 1 year-old roots, $1.25 per dozen; $6.00 per 100.

Three New Potatoes.



1. Pride of America.—In appearance resembles the Snowflake, a few days later; very productive, large size, an excellent keeper; of superior quality.

2. Matchless.—Tubers very handsome, round; pale-red; flesh fine grained, pure white, and of excellent quality. A great cropper, an excellent keeper.

3. Silver Skin.—A cross between the Early Rose and White Peach Blow. Tubers medium to large. Skin smooth, silvery white, russeted. Flesh snowy white, fine grain, splendid quality, an excellent keeper.

Prices of each of the above, $1.00 per lb., 3 lbs. $2.50, by mail, prepaid. By freight or express at purchaser's expense, ½ Peck, $3.00; 1 Peck, $5.00; ½ bushel, $7.00; Bushel, $12.00; Barrel, $25.00.

Alpha.—The earliest variety known, and of extra fine quality—matures its crop in 55 days. 60 cts. per lb., 3 lbs., $1.25, by mail. Peck, $1.00, bushel, $2.50; barrel, $6.00.

Bliss' Illustrated Potato Catalogue, contains a descriptive list of all the new varieties recently introduced, with many other desirable sorts, beautifully illustrated. Centennial collection of 500 varieties. Also much useful information upon the cultivation of this valuable esculent. 10c.

RELIABLE ONION SEEDS.

Our stock of Onion Seed has been raised from selected bulbs, and carefully tested, and we can recommend it with the greatest confidence, as equal to any ever offered in this or any other market.

	oz.	¼ lb.	lb.
Extra Early Red	$0.35	1.10	3.50
Early Red	30	1.00	3.00
Wethersfield Large Red	25	75	2.00
Danvers Yellow	40	1 25	4.00
Yellow Dutch	30	1.00	2.50
White Portugal	30	1.00	2.75
Early Cracker	40	1.25	4.00
Early Red Globe	40	1.25	4.00
Southport Red Globe	35	1.10	3.50
Southport White Globe	35	1.10	3.50

In lots of 5 lbs. and over, 50 cents per lb. may be deducted

Postage must be added at the rate of 16 cents per pound when ordered by mail.

B. K. BLISS & SONS, **34 Barclay St., N. Y. City. P. O. Box 4129.**

HEADQUARTERS FOR THE CUTHBERT RASPBERRY

The Royalty of Raspberries.
The **CUTHBERT**
I have by far the largest and best stock in the country of this "Queen of the Market" as well as the Fruit Garden.
A superior stock of **PLANTS** of all the *good old* and *choice new varieties* for Spring planting, of STRAW, RASP, BLACK, GOOSE **BERRIES** GRAPES AND Currants.
My new Catalogue for Spring (24 pages), gives complete instructions for planting and cultivation, *honest* descriptions and *fair* prices. *Free to all.*

J. T. LOVETT,
LITTLE SILVER, Monmouth Co., N. J.

NEW SEED WAREHOUSE.
THE FIRST TO INTRODUCE EUROPEAN PRICES,
allowing purchasers to make their own selection of Flower and Vegetable Seeds in packets, at the extraordinary discount of 33⅓ per cent. from Catalogue rates.
CATALOGUES SENT FREE TO ALL.

DESIRABLE NOVELTIES.

Early Washington Tomato.—A very handsome variety, of perfect form, smooth as an egg, and rich, deep-red color. Fully a week earlier than "Acme," as solid as "Trophy," and decidedly superior in flavor. Per packet, 15 cts.

Carrara Rock Cauliflower.—The earliest variety known; produces beautiful, compact, snow-white heads of the finest quality. Resisting heat and drought, it will head where other varieties fail. Per packet, 50 cents; half oz., $6.00; oz., $10.00.

Coral Flesh Musk-Melon.—(*From Japan.*) A very early, densely netted variety, of round form and medium size. The rind is remarkably thin, while the suffused coral flesh is thick, deliciously crisp and melting. Per packet, 25 cents.

A. D. COWAN & CO.,
AMERICAN SEED WAREHOUSE,
114 Chambers Street, New York.

My **Annual Catalogue of Vegetable and Flower Seed for 1880** will be ready by January, and sent **free** to all who apply. Customers of last season need not write for it. I offer one of the largest collections of vegetable seed ever sent out by any seed-house in America, a large portion of which were grown on my six seed farms. **Printed Directions for cultivation on every parcel.** All seed sold from my establishment warranted to be both fresh and true to name; so far that should it prove otherwise, I will refill the order gratis. As the original introducer of the Hubbard and Marblehead Squashes, the Marblehead Cabbages, and a score of other new vegetables, **I invite the patronage of all who are anxious to have their seed fresh, true, and of the very best strain. NEW VEGETABLES A SPECIALTY.**

JAMES J. H. GREGORY, Marblehead, Mass.

DREER'S GARDEN CALENDAR

FOR 1880.

136 PAGES BEAUTIFULLY ILLUSTRATED.

The best work on GARDENING. It contains descriptive **price lists** of **VEGETABLE** and **FLOWER SEEDS** and **CHOICE PLANTS,** with **every thing** for the **Garden.** Copy, with large **Chromo** of **New COLEUS, 10** cts.; plain copy, **6** cts. for postage. **Wholesale list** for **Florists** and **Market Gardeners free.**

HENRY A. DREER,
Seedsman and Florist, 714 Chestnut St., Philadelphia, Pa.

SEEDS OUR NEW BOX FOR 1880 contains *Variegated Lima Bean, Mammoth Tours Pumpkin, New Excelsior Watermelon, Prize Paragon Tomato, Green Prolific Cucumber, Sutton's Student Parsnip, Yellow Ovoid Mangel, Nimble Six Weeks' Turnip, Large Viroflay Spinach* and an improved *New Radish.* The whole 10 pkts., at retail, *are* **worth $1.00,** but will be sent, post-paid, in a neat box, for **only 25 cts. Burpee's Seeds are popular wherever grown,** and this great special offer is made to introduce them to thousands of new customers. **Burpee's Flower Seeds** are finest in quality and lowest in price. *Your choice of all varieties* at 5 CTS. PER PKT.; 25 PKTS. FOR $1.00. Our popular collections of **10 Pkts. for 25 cts.; 20** Varieties **for 50 cts. FOR ONE DOLLAR** we will send, post-paid, **40 Pkts.** of Garden, Field and Flower Seeds. Full directions for culture printed on each packet of the above. Postage Stamps taken. **Order now. Burpee's Farm Annual for 1880,** enlarged and fully illustrated, telling all about Seeds, Plants, Small Fruits; Blooded Live-Stock, Fancy Poultry, Dogs, &c., sent free to any address.

W. Atlee Burpee & Co., 321 Church St., Philada., Pa.

A NEW VARIETY!

Examined and Endorsed by Agricultural Department at Washington. **A Large and Luscious**

HYBRID TOMATO.

Superior to all other Species, taste and flavor assimilating orchard fruit. This species of Tomato, the Yellow Large and Red Medium, each equally delicious in flavor, may be procured in packages of about 50 seeds, and will be sent to any address on receipt of 25 cents. ☞ Address
SEVERIN MILLER, P. O. Box 394, Davenport, Iowa.

Farm & Vineyard for Sale.

Rare Chance for a Good Investment.

Address **Lock Box 15, Geneva, N. Y.**

Peach Trees for everybody. Apples adapted to a wide range of climate. Small Fruits, etc. Price-list free.
R. S. JOHNSTON, Stockley, Del.

Ask Your Merchant for

LANDRETHS' GARDEN SEEDS

They are **NOT** sent out all over the country to be sold on **commission.**
They are **NOT** put up in **Fancy Picture Papers,** illustrating improbable vegetables.
They are **NOT** to be found for sale in grog shops.
They **ARE** grown by the Subscribers on their own **farms** in Pennsylvania, Virginia, New Jersey and Wisconsin.
They **ARE** put up in plain paper, at the lowest cost. The purchaser, therefore, pays for **seed** and not for fancy paper and printing.
They **ARE** sold by **respectable** Merchants, Druggists, Grocers, etc., **who buy them outright,** because they know **they will prove satisfactory to their customers.**
They **ARE** to be had in any quantity in papers—in ¼ lb. packages, in pints of Peas, Beans, and Corn, or in Bulk.
If your Merchant does not keep them, send for Landreths' Rural Register and Almanac, containing catalogue and prices, and order them direct from headquarters.

DAVID LANDRETH & SONS,
21 and 23 South 6th St., Philadelphia, Pa.

GRAPE VINES.

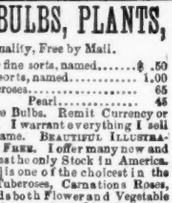
Also **Trees, Small Fruits, &c. Wholesale rates very low** to Nurserymen, Dealers, and large Planters. Send stamp for Descriptive List. Price List **free.**
T. S. HUBBARD, Fredonia, N. Y.

GRAPES **Prices lower than ever. Largest Assortment** of **old** and **new** varieties. Plants of **best Quality;** at doz. rates **free by Mail,**
Send for Price List. Address
BUSH & SON & MEISSNER,
BUSHBERG, Jefferson Co., Mo.

MOORE'S EARLY

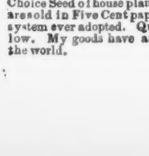
New $60 Prize Grape. Very hardy, very early, and fine quality. Never Mildews, Winner of a first-class Certificate of Merit. The $60 Prize for the best new seedling. 26 First Prizes; 2 Silver Medals. Also Moore's New Cross-Bred Asparagus, the largest grown. Send for circular.
JOHN B. MOORE, Concord, Mass.

SEEDS



Western Seeds beats the world. Mine takes the lead. Fresh, pure cheap and warranted. Prices below every firm. I give more extra as presents than all firms. I have issued 20 000 prettiest books on gardening ever printed. Every vegetable and flower pictured and described. Worth many dollars to any one. Send for free Garden-Guide and Seed Catalogue and see that I beat them all.
☞ R. H. SHUMWAY, ROCKFORD, Ill.

BEST seeds EVER grown



SEEDS, BULBS, PLANTS,

Of Superior quality, Free by Mail.

10 Gladiolus, 10 fine sorts, named	$ .50
9 Lilies, 9 fine sorts, named	1.00
12 Double Tuberoses	65
6 " " Pearl	45

All good large Bulbs. Remit Currency or Postage Stamps. I warrant everything I sell to be true to name. BEAUTIFUL ILLUSTRATED CATALOGUE FREE. I offer many new and beautiful novelties, some of which I possess the only Stock in America. 40 New Lilies, my Collection [70 kinds] is one of the choicest in the world. New Amaryllis, Gladiolus, Tuberoses, Carnations Roses, Choice Seed of house plants, &c. All seeds both Flower and Vegetable are sold in Five Cent papers, (except choice greenhouse kinds) the best system ever adopted. Quality in all cases first class. My prices are low. My goods have an established reputation and go to all parts of the world. J. LEWIS CHILDS, Queens, N. Y.

B. M. & Co's Reliable **SEEDS** B. M. & Co's Reliable **SEEDS**

Our large Illustrated Catalogue of everything for the Farm or Garden mailed **Free to All.** It costs nothing and may save you a great deal. Send for it.

BENSON, MAULE & CO., 223 Church St., Philadelphia, Pa.

THE PHILADELPHIA BROAD-CAST SEED-SOWER,

for Sowing all Varieties of Grain and Grass Seeds, also Fertilizers.

No. 1 Machine, price $30, averages 12 to 15 acres per hour. No. 2 Machine, price $6 (see cut), from 4 to 6. At the same time sowing better and far more evenly than by *hand or any other* method. Send for circular.

Agents wanted in every county.

Benson, Maule & Co.,
Manufacturers, **223 Church St., Philadelphia, Pa.**

Shakers' Garden Seeds.

True and Genuine. Fresh and Reliable.

One of the oldest seed firms in the country. Seeds sent by mail Postage free. Special prices and terms to *Grangers.* "The excellence of the Shakers' Garden Seeds is generally admitted."—*Ed.'s American Agriculturist.*

Illustrated and Descriptive Catalogue of Vegetables and Flower Seeds **Free.**

Address **CHARLES SIZER, Mount Lebanon, Col. Co., N. Y.**

SEEDS.

My Annual Priced Catalogue is now ready and mailed free to all applicants. It contains all the leading and most popular sorts of

VEGETABLE, FIELD,
AND
FLOWER SEEDS.

Besides all the desirable novelties of last season, and nearly everything else in my line of business.

ALFRED BRIDGEMAN,
876 BROADWAY, NEW YORK.

FLOWER SEEDS. FLOWER SEEDS. 32 KINDS FOR $1.00. Having over 40 years' experience in cultivating Flower Seeds, etc., I have made a selection of all the most desirable flowers for general cultivation. Any one selecting from it can obtain just as fine flowers as if selecting from an expensive fancy catalogue, at less than half the expense—as many on the list are sold by others at 10c., 15c., 20c., and 25c. per pkg. The list will be sent to all who apply for it. G. R. GARRETSON, Flushing, L. I., N. Y. Wholesale and retail dealer in all kinds of seeds.

Send for the following Descriptive Catalogues:

No. 1—Vegetable Seed Catalogue.

No. 2—Flower Seed Catalogue.

No. 3—Plant and Tree Catalogue.

Sent free on application.

I. J. SIMONSON, 63 Barclay St., N. Y.

Established 1825.
Garden and Flower **SEEDS**
Peas and Beans.

Select Seeds at low prices. Catalogues free.
J. BOLGIANO & SON, Baltimore, Md.

REID'S PREMIUM SEEDS.

100 000. Copies.

Send Stamp for

If you desire **Reliable Seeds,** send stamp for this beautiful Catalogue with Colored Plates.

Name this paper. **W. H. REID, Rochester, N. Y.**

CLOVER!

THE CLOVER-LEAF, a 4-page, 24-column farmers' paper, containing valuable information on the culture and harvesting of clover for seed. Sent free to every farmer sending us his name.

BREDSELL, M'F'G CO., South Bend, Ind.

Say you saw this in the *American Agriculturist.*

Reliable SEEDS

WEBB'S Kinver Mangel, (*the best.*)

Half Long, and Improved Long Orange CARROT, DOURA, COW PEAS, CHOICE OATS, Spring Wheat, Spring Rye, Sweet Corn for Fodder, etc., etc.

OUR CATALOGUE, with description of above, with full lists of **CHOICE VEGETABLE** and **FLOWER SEEDS,** mailed on receipt of stamp for Postage.

R. H. ALLEN & CO., P. O. Box 376, New York City.

FRESH, PURE SEED

Our New England-grown Seeds have secured an enviable reputation, and we again invite the attention of **Farmers, Gardeners, Florists,** and others to our new and select stock of every variety, which we offer at low prices. Our **Boston Market Vegetable Seeds** have a special reputation for excellence, and our stock of **Flower Seeds** is unsurpassed in all the choicest varieties. Seeds sent by mail to all parts of the country, and guaranteed to reach purchasers. New Catalogue for 1880 sent free.

HOVEY & CO., BOSTON, MASS.

HAWLEY'S
Genuine Wethersfield Large Red
ONION SEED.

(Strictly prime New Crop)	per lb.	$2.00
Choice Yellow Danvers, do	"	4.00
White Globe and Portugal, do	"	3.00
True Early Jersey Wakefield Cabbage, do	"	4.00
Choice Premium Late Flat Dutch, do	"	2.00
True Boston Market Celery Seed, very *extra* stock,	" oz.	.35
Imperial Cauliflower, fine, new	"	1.50
Best Lettuce for Forcing (Boston Market)	"	.40
Choice Acme Tomato, very extra	"	.30

All above and many other choice varieties Seeds sent by mail, post-paid, on receipt of price. Also 1880 Seed Catalogue free. Address **R. D. HAWLEY, 492 & 498 Main St., Hartford, Conn.**

Get Prices **ONION SEED.** Before Buying

Fresh and Reliable. Red, White, and Yellow. From Selected Stock. Prices reasonable.
Address **E. B. JENNINGS, Southport, Ct.**

ALPHA TOMATO,

12 to 15 days earlier than any other. The best in flavor and shipping qualities; very productive, fine size, form, and color; no one can afford to do without it. Packets of seed from extra select July fruit 25 cts. each, 5 for $1, from August fruit 15 cts. each, 8 for $1. 3 ct. stamps taken for change. For *Headquarters,* Seed, testimonials and particulars, address the originator, FRANK FORD, Ravenna, O.

P. E. Island Early Rose.

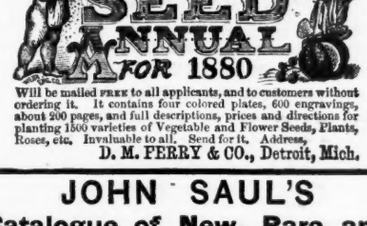
BEST IN THE WORLD

For early planting and heavy crop. Only $2.50 per barrel. Stock is limited. Please order early. *Also Seed Sweet Potatoes in season.* T. C. DAVENPORT, 124 Dock St., Phila., Pa.

POTATOES. **Ten New Varieties** *raised from seed balls.* Catalogue *free* if you mention this paper. Address J. H. ANDRE, BINGHAM'S, Tioga Co., New York.

SEED POTATOES.—Burbank, Snowflake, Peerless, $2½ per bbl. By mail 4 lbs. $1. Large tuber Burbank 25c. P. SUTTON, Ransom, Lack. Co., Pa.

SEEDS AND PLANTS direct from Grower, especially suited to Market Gardeners wants. Circular and Price List **free.**
E. M. HAVEN, Bloomingdale, Mich.



Will be mailed **FREE** to all applicants, and to customers without ordering it. It contains four colored plates, 600 engravings, about 200 pages, and full descriptions, prices and directions for planting 1500 varieties of Vegetable and Flower Seeds, Plants, Roses, etc. Invaluable to all. Send for it. Address,
D. M. FERRY & CO., Detroit, Mich.

JOHN SAUL'S
Catalogue of New, Rare and Beautiful Plants

will be ready Feb. 1st, with a colored plate.—It is full in really good and beautiful plants.—New Dracænas, New Crotons, New Pelargoniums, New Roses; Geraniums, Clematices, &c., with a rich collection of Fine Foliage and other Greenhouse and Hot-house plants, well grown and at low prices; Free to all my customers, to others 10 cts., or a plain copy free. Catalogue of Seeds and Roses free.

JOHN SAUL, Washington, D. C.

My New Catalogue Describes

NEW Apples, **NEW** Pears, **NEW** Peaches, **NEW** Quinces, Grapes, and Strawberries. **SEND FOR IT,** and form a club. Reliable men wanted to act as agents.

Address **F. L. PERRY, Canandaigua, N. Y.**

GARDEN and FARM SEEDS

BY MAIL OR EXPRESS

Sent to any part of the United States by
WM. H. CARSON,
125 Chambers Street, New York.

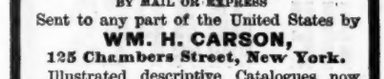
Illustrated descriptive Catalogues now ready, and will be sent on request. I offer a complete stock of Vegetable, Flower and Farm Seeds, Small Fruit Plants, Fertilizers and Garden requisites, all of the very best quality, and at reasonable prices.

THE ALBANY SEED STORE.

ESTABLISHED 1831.

49th YEAR.

PRICE & KNICKERBOCKER, Successors to



General Catalogue of Reliable Flower, Vegetable and Field Seed, Vegetable and Flowering Plants, and SMALL FRUITS,

MAILED FREE. 80 PAGES—450 ILLUSTRATIONS.
80 STATE STREET, Albany, N. Y.

VERMONT SEED

EXPERIENCED PLANTERS ARE AWARE THAT NORTHERN GROWN SEED WILL PRODUCE THE EARLIEST RESULTS. ILLUSTRATED CATALOGUE MAILED ON RECEIPT OF STAMP.

C. E. ALLEN,
FLORIST AND SEEDSMAN, BRATTLEBORO' VT.

Farm, Garden, and Flower Seeds,
WITH
DIRECTIONS FOR CULTIVATION,

Free to all readers of the *American Agriculturist* who will send me their address on a postal card.

JOSEPH HARRIS, Moreton Farm, Rochester, N. Y.

Asparagus---New Variety.

Smalley's Extra Early Defiance; 2 weeks earlier than Colossal, a larger, softer grass; far superior to all other varieties. One acre will produce more grass with the same treatment than 2 acres of Colossal. It is the best Asparagus grown, either for private use or for market. Two-year-old plants, $5 per 100, $30 per 1,000; seed $10 per lb. Address
A. SMALLEY, BOUND BROOK, Box 99, N. J.

VICK'S Illustrated FLORAL GUIDE

A beautiful work of **100 Pages, One Colored Flower Plate, and 500 Illustrations,** with Descriptions of the best Flowers and Vegetables, and how to grow them. All for a FIVE CENT STAMP. In English or German.

VICK'S SEEDS are the best in the world. FIVE CENTS for postage will buy the FLORAL GUIDE, telling how to get them.

The **Flower and Vegetable Garden,** 175 Pages, six Colored Plates, and many hundred Engravings. For 50 cents in paper covers; $1.00 in elegant cloth. In German or English. Address

JAMES VICK, Rochester, N. Y.

FLOWER SEEDS AT HALF PRICE.

Over **800** varieties. **BEST** home-grown and imported. **5c.** pkts. for 2½c.; **10c. pkts. for 5c., etc. 25c my low-priced list of Verbenas, Roses,** and other plants by mail. Catalogues free. D. C. McGRAW, Riverside Gardens, Binghamton, N.Y.

---

20 Flowering Plants BY MAIL FOR **$1**

Prices Greatly Reduced. Our new instructive Catalogue describes all the leading Plants, Bulbs and Seeds. It is the cheapest price-list ever offered. Free to all. Send for it to THOS. ELVERSON,
Hillside Greenhouses, New Brighton, Pa.

JAPAN LILY BULBS.

Best sorts, imported direct via San Francisco, in original clay. If you are interested in *Lilies* or other *bulbs,* write to **J. C. VAUGHAN, 45 La Salle St.,** Chicago, Ill.

The New Potato "CHICAGO MARKET."

A **BEAUTIFUL NEW SEEDLING GRAPE**—the **Beauty of Minnesota**—the best of all grapes known. Some fruit on hand yet. Send for Circular. Address JOHN C. KRAMER, La Crescent, Houston Co., Minn.

Send for New Pamphlet (1880) containing Results with Practical Growers.

THE MAPES COMPLETE MANURES FOR EACH CROP.

A few Reports (Extracts) from well known Potato-Growers and Farmers in the Use, during the past Season, of the MAPES POTATO MANURE.

MESSRS. TEN EYCK BROS., Truck Growers, etc., Matawan, N. J., report Nov. 1, 1879: "Yield on eight acres nearly 1,600 bushels of potatoes. No acre fell below 180 bushels per acre, while some parts of the field did not fall short of 240 bushels per acre—95 per cent marketable. Land was in poor heart. The yield of the rows left unfertilized was too poor to be considered of any market value; the difference was so great as to make it difficult to state the degree. The season might be called a good average one, until the heavy rains that occurred in **August, which seemed to have a killing effect on the vines of the earlier sorts.** A marked difference of **more than two weeks** were unexpectedly seen in the **early** maturing effects of these fertilizers, over a good dressing of coarse yard manure, which was clearly proved on a separate piece, planted with the same variety of potatoes, and the yield one to *four* in favor of the special manures, and of *far better quality.*

"Having had an experience of over thirty years in this line of business, we are firmly convinced that better paying results will follow the judicious use of your Concentrated Manures for farming crops, than in the use of the stable manures of the cities, at such prices as they seem to command."

"The cost of these potatoes, grown as above, for the manure, including freight, cartage, and spreading, was **twenty-three cents a barrel**, or about **eight cents a bushel.** If there be a purchasable manure that will reduce that cost under like circumstances, we should like to learn what it is, and where it can be had."

MESSRS. E. & J. C. WILLIAMS, Nurserymen, Montclair, N. J., state in their last issued catalogue that they grew during the past season from a single barrel of their "Late Rose Potatoes," 210 bushels with the Mapes Potato Manure.

MR. JOHN T. LOVETT, Vice-Pres. "American Association," writes, Jan., 1880: "I had startling results from the use of the Mapes Potato Manure the past season on poor light land. Had finer potatoes, and more of them, than my neighbors who paid *four times* as much money for stable-manure."

MR. FREDERICK MORTON, Rocky Hill, Conn., reports, Oct. 21st, 1879: "On very poor soil, natural yield only 25 bushels per acre, grew 200 bushels potatoes per acre with 600 lbs. of the Mapes Potato Manure. The potatoes grown with your manure were all of **two weeks earlier** than those grown with stable-manure (10 cords applied per acre)."

MESSRS. W. B. & O. C. KNAPP, farmers, Round Hill, Fairfield Co., Conn., report, Dec. 15, 1879: "Think the Mapes Potato Manure worth its cost in *keeping the worms* from eating the crop. 400 lbs. per acre, broadcasted and harrowed in, produced a much larger yield than grown with either barn-yard manure or compost of hen-manure, ashes, and plaster."

MR. S. D. BURROWS, Basking Ridge, N. J., writes, Dec. 23d, 1879: "One handful, scattered in each hill at time of planting, yield was equal to a heavy coat of yard-manure with wood-ashes."

MR. W. T. PARKER, Little Silver, N. J., writes, Oct. 24th, 1879: "The Mapes Potato Manure used at the rate of about 400 lbs. per acre, alongside of 25 tons of compost to the acre, costing $30 without adding cost of handling. Saw but little difference in the crop. Used the same rate (money value) of the Mapes Manure as compared to the compost, and it nearly *doubled* the crop."

MR. ANDREW N. DEBAUN, Oradell, Bergen Co., N. J., writes, Dec. 22d, 1879: "The Mapes Potato Manure has made a grand impression in this section. The potatoes generally looked poorly in all cases without the fertilizer. Barn-yard manure did not seem to tell in the early part of the season, and the dry weather we had was likely to affect those most that were late in maturing. Had 260 bushels per acre Early Rose Potatoes with the Mapes Manure. 126 bushels per acre on natural soil. My Clawson Wheat grown with the Mapes Complete Manure ("A" Brand) took the first premium at our County Fair."

MR. A. P. WAKEMAN, Fairfield, Conn., writes, Dec. 16th, 1879: "Potatoes grown with the Mapes Potato Manure were large, smooth, with very fine flavor. **They did not rot,** while in the same field, side by side, where I used well rotted manure, at the rate of 15 two-horse loads per acre, with plaster in the hill, **they rotted quite badly.**

MR. LEWIS BEACH, New Castle, New York, reports, Nov. 15th, 1879: "Soil gravelly and high; corn stubble; yield from natural soil, 140 bushels; with barn-yard manure, 180 bushels; with same quantity of barn-yard manure, and 400 lbs. of the Mapes Complete Manure, **284** bushels per acre. The potatoes grown with the Complete Manure were of superior quality and size. They received the First Premium at the Agricultural Fair at Yorktown. The Potato Manure prevented the grubs from depredating, and increased the crop fully **fifty per cent** above the yard-manure alone.

MR. JOSEPH COBY, Westfield, N. J., reports Dec. 9th, 1879: "Yield of Early Rose greater from an application of 800 lbs. of the Mapes Potato Manure (costing $20) than from **thirty-nine** loads of stable-manure at **two dollars per load**—total, $78. 400 lbs. of Mapes' Beet and Mangold Manure per acre **broadcast** yielded 1,020 bushels beets per acre. 40 loads stable-manure yielded 840 bushels per acre, and the natural soil 437 bushels per acre."

Some other Crops grown with the MAPES MANURES past Season.

450 BARRELS CAULIFLOWER from 1¾ cares—and 225 bushels potatoes per acre.—JOHN CAMPBELL, Cutchogue, Suffolk Co., N. Y.

500 BUSHELS ONIONS per acre—350 bushels with stable manure, and 250 bushels per acre on natural soil.—F. W. PUGSLEY, Poughkeepsie, N. Y.

"600 BUSHELS PER ACRE of as nice onions as ever grew."—"One bushel of the White Onions took the **First Premium** at the Norwalk Fair. It would have been useless to have tried to get **half a crop** without the Mapes Onion Manure" (Complete Manure for light soils.)—CHARLES A. MEEKER, Southport, Conn.

"This is the first special manure I ever used that grew a crop of onions equal with **hen manure.**"—A. N. HOUSE, Chester, N. Y.

105 BUSHELS WHEAT from 3½ acres; 200 bushels potatoes per acre on light soil; Turnips far superior in size and quality to those raised with barn-yard manure.—HENRY C. HERRING, Spring Valley, N. J.

FIVE PREMIUM CROPS OF ASPARAGUS grown during the past three seasons at Oyster Bay, exhibited at Spring Exhibitions in Mineola, L. I., were raised with the MAPES ASPARAGUS MANURE. Successful competitors were VALENTINE FROST, Locust Valley, L. I., and GEORGE H. TOWNSEND, Glenhead, L. I.

44 BUSHELS BARLEY per acre on heavy loam.—J. LAWRENCE SANFORD, Southampton, Suffolk Co., N. Y.

PREMIUM POTATOES "grown with the Mapes Manure—Queens Co. Agricultural Society, Town of Oyster Bay."—RICHARD C. COLYER, Woodbury, L. I.

PREMIUM POTATOES, "Best Early Rose," grown with the Mapes Manure—Agricultural Fair at Mineola, L. I.—T. CARLL BAYLIS, Mineola, L. I.

PREMIUM ROSES, Sweet Williams, etc., grown with the Mapes Manure—Queens Co. Agricultural Fair, Mineola, L. I.—WM. A. BURGESS (Dosoris), Glencove, L. I.

TWELVE Medals and Awards given to the Mapes Manures by the State Agricultural Societies and Institutions in Connecticut, New Jersey, and New York States during the past two years.

Quick Action and LASTING EFFECT of the Mapes' Manures.

A second year's experience with artificial fertilizers confirms my previous opinion of their value. As a help to fill out the supply of manure, of which no good farmer yet ever had enough, they are invaluable and indispensable. The great advantage is their quick action; 300 pounds per acre of **Mapes' Complete Manure** ("A" brand), spread over a field of Oats, was rained upon at night when the work was but half finished. Before the next evening the part first covered was conspicuously greener than the other part, showing that in the 24 hours the effect of the fertilizer was already in action. The permanence of these fertilizers has been much questioned; but there seems to be no doubt of it. One of my fields of fodder rye, which was in potatoes in 1878, and was then dressed with no manure but the **Mapes' Potato Manure** at the rate of 600 pounds per acre, was put in rye the same fall; the rye was cut for fodder the next spring, and the land was sown to Hungarian grass. Both these crops were unusually good. A part of the rye was cut twice, and a part, left for seed, produced good plump grain. The field is sown to rye again, without any manure or fertilizer, and looks remarkably well, and quite equal to another field on which 20 loads per acre of rich cow manure was spread. The effects of the fertilizer are *clearly not exhausted by* THREE *crops, and show favorably on the* FOURTH.

"HENRY STEWART, Westwood, Bergen Co., N. J., Dec., 1879."

"In the spring of 1877 we top-dressed with Mapes' Spring Top-Dressing at the rate of 500 lbs. per acre, a field of wheat of 12 acres, that had been winter killed. Some of our neighbors assured us there could not be *a bushel* to the acre, so apparently completely was the wheat destroyed. At harvest we cut a better crop than seemed possible, and the grass showed good. On threshing there was over 12 bushels to the acre, but we looked for our profit in the grass; in the summer of **1878** we cut an excellent crop of grass, but the crop of **1879 was even better,** showing the PERMANENCE of your manures. Crossing the fence to a field adjoining, owned by one of the best farmers in the town of Oyster Bay, may be seen grass laid down at same time with the customary costly dressing of New York stable manure—presenting a striking contrast—it is full of weeds, and the grass is thin and weak, whilst our grass is **clean, thick, and strong.**

"C. W. CARPENTER, Locust Valley, L. I."

These Manures are all READY-MIXED, in FINE, DRY condition, and EASY OF APPLICATION.—Full Directions for use and all information required for their use accompany EVERY PACKAGE. These Mauures have been repeatedly subjected to Analytical Test by the leading Chemists and State Inspectors at the Stations—and IN NO INSTANCE HAS THE STRENGTN OF ANY ONE OF THESE MANURES BEEN FOUND TO BE BELOW THE STANDARD, fully given, in percentages, on each tag. Send for New Pamphlet (1880). Address

THE MAPES FORMULA AND PERUVIAN GUANO CO., 158 Front Street, New York.

BRANCH STORE AT HARTFORD, CONN.

Experiment Set "A," $7.00.—"Complete Manure" Experiment Set, $5.00. Descriptive Pamphlet, "Farm Experiments," prepared by Prof. W. O. Atwater, and Blanks for Reporting Experiments, enclosed with each Set "A."

Rue's Hand Cultivator & Seed Drill.

Send for circulars to GEO. W. RUE, Hamilton, Ohio.

---

100 Varieties selected Fruits, Fruit Plants, and Fruit Trees, grown for transplanting and fruit for the market. Catalogue free. J. S. COLLINS, Moorestown, N. J.

MATTHEWS' SEED DRILL

The Standard of America.

Admitted by leading Seedsmen and Market Gardeners everywhere to be the most perfect and reliable drill in use. Send for circular. Manufactured only by

EVERETT & SMALL, Boston, Mass.

ARTICHOKES, AND MAGIE SWINE

for sale. Send for free circular.

E. F. BROCKWAY, Ainsworth, Washington Co., Iowa.

FIRE-PROOF FARM BUILDING.

FIRE, WATER, & WIND-PROOF. Can be applied to old or new buildings by an ordinary mechanic or laboring man. Adapted to all climates and seasons. The cheapest and best covering for buildings ever made where durability is desired. See article *Am. Agriculturist,* Nov., 1879, page 464. Information free. Address

W. T. WELLS,
73 Beekman St., New York.

HENDERSON'S

Combined Catalogue of

SEEDS AND PLANTS

Sent free to all who apply by letter.
Peter Henderson & Co.,
35 Cortlandt Street, New York.

BERRIES.

QUEEN of the MARKET

the largest and best. 2,000,000 *Sharpless Strawberries.* 1,000,000 *Miner's Great Prolific.* 10 acres other *choice varieties.* 2,625 bushels Berries grown at **Pomona Nursery** in 1879. A new race of Peaches. **Kieffer's Hybrid, Blight-Proof;** *hardy and productive,* bears early, fruit large, and **of good quality.** ☞ Send for Catalogues **free.**

WM. PARRY,
Cinnaminson, N. J.

Cuthbert Raspberry

E. P. ROE has the largest and finest stock in the country of this unequalled market Raspberry. The wide and varied test of the past season proves it to be the **finest,** largest, hardiest, bright red raspberry before the public. A third larger and twice as productive as the Brandywine, and so remarkably firm that it can be shipped by rail to market. It has yielded at the rate of $800 per acre. For portrait see April No. of "Scribner's Magazine." Catalogue free. Address

E. P. ROE, Cornwall-on-Hudson, N. Y.

Strawberry Plants	Either kind	**Raspberry Plants**
50 Sharpless	*postpaid*	15 Cuthbert (Red)
100 Crescent Seedling	for **$1.00**	25 Herstine (Red)
100 Cumberl'd Triumph	LAPHAM	50 Brandywine (Red)
100 Monarch of West	& ANTHONY	25 Gregg (Black)
100 Boyden's Thirty	Clayton, Del	50 Mam.Cluster(Blc'k)
100 Chas. Downings.	Descriptive	**Blackberry Pl'nts**
GRAPE VINES.	Catalogue	35 Kittatinny
15 Concord	Free.	35 Wilson's Early
12 Hartford Prolific	*The Dollar*	35 Dorchester
8 Martha (White)	*Nursery.*	35 Lawtons.

600,000 PLANTS BY MAIL! *A Nursery at your door.* Best **new** Raspberry and Strawberry Plants. *Early Prolific, Reliance, Cuthbert, Queen of the Market, Thwack* (red), *Florence* (yellow), *Gregg* (black). **50c.** a dozen. *Sharpless, Miner's G. P., Glendale, Cinderella, Duchesse, Continental, Crescent, Monarch, Pioneer, Seth Boyden, Forest Rose,* **30c.** a dozen. Purity and genuineness of plants and safe arrival guaranteed. Send for a descriptive circular and list of lowest wholesale prices. Address

GIBSON & BENNETT, Woodbury, N. J.

1,000,000 SHARPLESS Strawberry Plants, Noted for *Great Vigor, Productiveness, Large Size, and Best Quality for Market and Family Use.* Get Plants direct from Central Pennsylvania, "the home of the Sharpless," and be sure they are genuine. Descriptive Catalogues free.

J. L. DILLON, Florist, Bloomsburg, Pa.

STRAWBERRY PLANTS—Pure, Well Grown, Packed free. Charles Downing, Crescent Seedling, Wilson Albany, Captain Jack, Kentucky, and Monarch of the West, at $1.50 per 1,000. Boyden No. 30, Champion, Cumberland, Triumph, and Cinderella, at $2.50 per 1,000. Miner's Prolific, $3 per 1,000. Sharpless, $8 per 1,000. For prices of 40 other sorts, or for large lots, see Catalogue or write for special rates. Please Address J. S. COLLINS, Moorestown, N. J.

STRAWBERRY PLANTS.

All the new and standard kinds. Illustrated Catalogue sent Free. C. S. PRATT, Agt., North Reading, Mass.

STRAWBERRY PLANTS. Sharpless Seedling and other varieties in large quantity. **Raspberry** and **Blackberry** Plants in variety. **Asparagus.** Very fine at $4 per 1,000. Send for Guide to Strawberry Culture and Price List.

WILLIAM H. MOON, *Morrisville, Pa.*

SHARPLESS, 40 cts. per doz; $1.50 per 100, post-paid. Other kinds lower. SNYDERS, $6 to $10 per M. Lists free to all. STONE LAKE NURSERY,
(Formerly Steele Bros.) La Porte, Ind.

THE CRYSTAL CITY STRAWBERRY is undoubtedly the earliest variety known. It proved itself the earliest last spring, by being in the market several days before any other strawberry from any part of the State. Send for Circular and Price List to

E. WILLIAMS, Crystal City, Jefferson Co., Mo.

FAIRVIEW NURSERIES. ESTABLISHED 1835. Sharpless, Miners' Prolific, Queen of the West, and 100 other good kinds of Strawberries, all the choice Raspberries and other small fruits. Peach Trees, Osage Orange, and small fruits, specialties. All kinds fruit and ornamental Trees, Shrubs, and Roses. Prices never lower. Price list free. J. PERKINS, Moorestown, N. J.

Thousands of Cuthbert Raspberry were planted in Rockland and Bergen Counties before it was advertised. Plants and root-cuttings for sale. Catalogue free. Prices low. Rockland Co. Nurseries, A. T. BLAUVELT & CO., Blauveltville, N. Y.

30 Acres Big Berries. Currants, Grapes, etc. 100 best sorts. Plants by mail or express. See our prices before buying of others. Illustrated Catalogue free. G. H. & J. H. HALE, So. Glastonbury, Conn.

H.W. JOHNS' ASBESTOS Liquid Paints.

☞ ARE STRICTLY FIRST-CLASS PURE LINSEED OIL PAINTS.

☞ THE BEST IS THE CHEAPEST.

These are the purest, finest, richest and most durable paints ever made for structural purpose. They are prepared ready for the brush in sixteen newest shades and standard colors, suitable for the tasteful decoration of dwellings and all classes of buildings, inside and out, and for all purposes where a perfect protective coating is required, and, covering body and durability considered, *they are twenty-five per cent cheaper than the best White Lead or any other kind of paint now in use.*

☞ *Our Asbestos Liquid White has been adopted for interior and exterior work of the U. S. Capitol at Washington.*

☞ *The Metropolitan Elevated R. R., of New York City, is painted with our paints.*

ASBESTOS ROOF PAINT.—Brown, Red, Yellow, Gray, Slate, and Cream, for tin and shingle roofs, iron work, agricultural implements, fences, outbuildings, etc. *We guarantee this to be a better article than has ever before been offered to the public for similar purposes.*

Samples of Colors and Descriptive Price-Lists by Mail.

H. W. JOHNS' M'F'G CO., 87 Maiden Lane, N.Y.

Manufacturers of **Asbestos Roofing, Boiler Covering, Steam Packing, Sheathing, Cements, Coatings,** etc.

THE DINGEE & CONARD CO'S
BEAUTIFUL EVER-BLOOMING
ROSES
THE BEST IN THE WORLD.

Our **Great Specialty** is *growing* and *distributing* these **Beautiful Roses.** *We deliver* **Strong Pot Plants,** suitable for *immediate* bloom, *safely by mail* at all post-offices. **5 Splendid Varieties,** *your choice,* all labeled, for **$1;** 12 for **$2;** 19 for **$3;** 26 for **$4;** 35 for **$5;** 75 for **$10;** 100 for **$13.** Send for our **New Guide to Rose Culture** (80 pp. elegantly illustrated) and *choose* from over **Five Hundred Finest Sorts.** Address

THE DINGEE & CONARD CO.,
Rose Growers, West Grove, Chester Co., Pa.

ROSES 6 for $1, 12 for $2, 100 for $7, postpaid. *Greenhouse and Bedding Plants, Hardy Shrubbery, Seeds,* etc., by mail. Catalogue free. J. T. PHILLIPS, West Grove, Chester Co., Pa.

Roses and Greenhouse Plants. 12 Plants for $1.00. Lady Agents wanted in every town. Send for Catalogue. Address WM. B. REED, Chambersburg, Pa.

SPLENDID FLOWERS OVER 200 Distinct Varieties

All Strong Plants, each labeled, delivered safely by mail. **Largest assortment. Low prices.** In business for **26 years.** *Guarantee satisfaction.* Stock comprises *all desirable varieties.* Only mature plants sent. Our new **Illustrated Hand-Book,** sent free, contains the name and description of each plant, with instructions for **successful** cultivation. *Do not purchase plants* **elsewhere** *before sending for our new* **HAND-BOOK** Every lover of *flowers* should have it. All buyers of *cheap plants* should have it. Every one wanting *new* and *choice plants* should send for our *Hand-Book.*

HOOPES, BROTHER & THOMAS,
CHERRY HILL NURSERIES, West Chester, Pa.

ROSES AND GERANIUMS.

I guarantee safe arrival, satisfaction, stock equal to any in market.
100 by express for $5. 50 by mail, $3.
Samples, 14 for $1.10. Lists free.

TYRA MONTGOMERY, Mattoon, Ill.

NEW HARDY PLANTS

in large and remarkable variety, including the

JAPANESE MAPLES.

Rhododendrons, Hardy and Greenhouse Azaleas, Camellias, Roses, Purple Beech, in large quantities.

Also a complete assortment of Fruit and Ornamental Trees, Shrubs, and Vines.

Price Lists **free.** Descriptive Catalogues 10 cents.

PARSONS & SONS CO. (Limited),
Kissena Nurseries, Flushing, N. Y.

GEO. S. WALES, Rochester, N. Y.

SMALL FRUIT PLANTS,

Seed Potatoes, etc. Circular free.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 90.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.50 if to be sent by mail). See Publishers' Notes, 3d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Fish as Fertilizer.—"J. C. D.," Richmond, Va. The fish known as Menhaden, or Moss Bunkers, are the kind used, merely because they are the most abundant; the oil is first pressed out of them, and the residue, dried and ground as Fish Guano, or Fish Scrap, is a regular article of trade with the dealers in fertilizers.

Feeding Poultry.—It is a common practice to throw the "chicken food" on the cold snow, sometimes where it is as deep as the fowls can well wade through, or even worse, into a regular mud hole. Neither of these methods is of advantage to the fowls; in the first case they are obliged to swallow a large amount of cold, chilling snow, and in the second, an amount of mud is taken into the stomach that is not desirable. All this discomfort could be avoided by providing a feeding trough, so arranged that the food may be clean. Aside from the looks of the practice, it will pay to be neat in feeding these animals that help to feed us.

Honey Locust Seeds.—L. Heading, and others will find at the end of an article on the Honey Locust, page 63, the information asked concerning the seeds.

Artichokes—Jerusalem—Brazilian.—Several inquiries. There is no such thing as Brazilian Artichoke so far as coming from Brazil any more than there is one coming from Jerusalem. It is not at all likely that this native American plant was ever seen in either place. We have more than once explained how the name Jerusalem came from a corruption of the Italian name *Girasol.* In France, where much more attention has been given to its culture than with us, they have nearly a dozen varieties. When some of our cultivators found that a short, round variety was more productive than the old fashioned long and slender one, they called it "Brazilian,"—a good enough name to distinguish that variety, but it should not be understood to indicate anything about its origin.

Nuts and Nubbins.

A stack-up thing—A show-bill.

Diet for prize-fighters—Pound cake.

A tornado is a great blow to any country.

We desire to be underrated only by assessors.

A musical instrument dealer advertises his drums that "can't be beat."

Charles Lamb said of one of his critics, "The more I think of him, the less I think of him."

In a written-spelling exercise, "Foregoes" was given out: a little boy wrote, "Go, go, go, go."

When a cat gives an entertainment on the top of a wall, it isn't the cat we object to; it's the waul.

A man fell in a fit in a tailor's shop. His envious rival said, "That's the first fit ever seen over there."

Many a rough customer has never known how good he was until he killed somebody and heard the lawyer in charge sum up his virtues.

After a Texas jury had disagreed for ninety-six hours, the judge got a verdict in two minutes by sending in word that a circus was in town.

"How far is it to Butler, if I keep straight on!"—"Well, about twenty-five thousand miles, but if you turn the other way it's about half a mile!"

Editor: "Our friend W. has presented us with a basket of grapes, for which he will accept our compliments, some of which are two inches in diameter."

An old lady in Wichita says she never could imagine where all the Smiths came from until she saw in a New England town a sign, "Smith Manufacturing Company."

A washerwoman, commended by her pastor for regular attendance at church, said, "Oh, yes, after my hard week's work it rests me so to come and sit in church and have nothing to think about."

"Which do you think would be the easiest for me to change myself into—a lion, a horse, or an ass?" asked a conceited fellow of a friend.—"Oh, into an ass, as that would require the least change."

A *c* for an *h*. A cow *jumped* on the track before an express train. The report of the danger said: "As the safest way, the engineer put on full steam, dashed against the cow, and literally cut her into calves."

In answer to a Music Committee, an applicant wrote: "Gentlemen, I noticed your advertisement for an organist and music teacher, either lady or gentleman. Having been both for several years, I offer you my services."

"Mr. Smith," you said you once officiated in the pulpit."—"Yes, sir: I held the light to the man that preached."—"Ah! the court understood you differently. It supposed that you delivered the sermon."—"No, sir; I only threw light upon it."

A life insurance agent tells us that only last week a man insured his life for $20,000, paying a single premium, and died the same night, and to day his family has the money. He advises us to follow the good example. We'll think it over, and ask the family about it.

A Chicago man having put his new trotter to his best speed, proudly asked a policeman why he did not arrest him for fast driving, and was answered: "No cause, sir; you haven't driven fast enough yet to violate no ordinance."—A trotting horse was offered for sale in the next morning's papers.

Teacher (trying to explain repentance): "If a bad boy steals an orange, and his mother catching him at it, tells him kindly how wicked it is and how grieved she is, don't you think that boy ought to feel sorry?"—Scholar: "Yessum."—Teacher: "And why?"—Scholar: "Cause he hain't et the orange before his mother cotched him and took it away from him."

If men were turned out of office *only* when they behaved badly, or because others could perform their duties better, we should find their *chief attention devoted to the performance of good work*, because that would be the root of their tenure of office. Now their most earnest thought is how to carry the next election for their party, as therein lies their tenure of office.

A weary peasant taking his first railway ride on a pitch dark night, wished to take a nap, but was bothered to find a place for his huge three-cornered hat in the crowded car. "*Here*, put it in the cupboard, my good man," said a commercial traveler, opening the window. The drowsy peasant complied, murmuring his thanks, and expressing his ignorance of the ways and conveniences of the rail. He was soon in a sweet sleep; before he awoke the commercial traveler prudently found a seat in another car.

A rich and ingenious mechanician constructed a safe which he declared to be burglar-proof. To convince the incredulous of the fact he placed a $500 note in his pocket, had himself locked in the safe, with a liberal supply of provisions, and the key cast into the river, declaring that he would give the money to the man who unfastened the door. All the blacksmiths and carpenters in the country have been boring and blasting at that safe for a week with every kind of tool and explosive mixture known to science, and the man is there yet! He has convinced everybody that it is the safest safe ever invented. Fears are entertained that the whole concern will have to be melted down in the blast furnace before he is released, and efforts are to be made to pass in through the keyhole a fire-proof jacket, to protect the inventor while the iron is melting.

A dilapidated old man entered a lawyer's office *with a book under his arm*, and looking around, apparently stupidly, inquired if he could see the lawyer. He was pointed to a sign reading: "Very busy just now; will see you later." The man went out. The lawyer heard that his visitor had a $50,000 case. Much vexed, the lawyer tore down his sign. Soon after the man called again with a book under his arm, and was received with great cordiality. He sat down and asked, "Very busy this morning; I don't want to annoy you?"—"Oh, no, plenty of time now; you can't annoy me at all; I shall listen to you with pleasure."—The old man slowly undid the book and began: "I'd like to call your attention to this Life of Napoleon; it is said the engravings alone cost $50,000, and yet the book is selling at only——."

The Death of Alfred Gray.—Just as we go to press, we see the announcement that Alfred Gray, Sec. of the Kansas State Board of Agriculture, died at Topeka, January 23d. No particulars are given of an event that will bring sadness to a wide circle of friends. We must at present content ourselves by saying, that no State has done more for her agriculture, than Kansas, and this has been largely due to the fact, that Alfred Gray was the most efficient Secretary. A practical farmer himself, he appreciated the needs of farmers, and worked most faithfully to supply them. Among the many pleasant recollections that cluster around the Centennial, are those of the delightful hours passed in the society of this most genial gentleman, and surely no State was more worthily represented, than Kansas in his person. The loss which Kansas sustains is a loss to the whole country.

A Good Knife is a good thing, and the further one is "off soundings," whether at sea, or beyond cities and stores, the more does he need a knife upon which he can rely. The cutlery sold in small places, and frontier towns, is much like the celebrated razors of Pindar, "made to sell." One who can be reached by mail, can be sure to get a good knife, a fact, duly set forth in its proper place.

Young Forest Trees.—The raising of most forest trees from the seed is not difficult, provided they can have the proper care in weeding, shading, etc. But this care is what the farmer who most needs the trees, is the least able to give, as it is demanded just at the time when he is busiest. We announced last year, that a great help was afforded to farmers in this matter by Messrs. Robert Douglas & Sons, of Waukegan, Ill. This firm which annually raises many acres of tree seedlings, last year tried the experiment of sending packages of young trees by mail. This was attended by such favorable results, that they propose to continue to do so this year. So greatly were we impressed with its importance, that in making up our list of useful articles for premiums, "Forest Trees by Mail," No. 129, were included. By supplying the farmer on the prairies with trees, that are, so to speak, beyond the dangers incident to childhood, tree planting is rendered a very simple matter, and it should lead to increased activity in this respect. The Messrs. Douglas say, and we doubt not, truly, that there is no appreciable direct profit in the enterprise, and that they hope to find their ultimate returns, in an increased love for tree-planting throughout the whole of the present treeless regions.

Mixed Farming.—Until our country is settled up, and the virgin fertility of the new soil is beginning to be exhausted, we can not hope for that safe and solid foundation for our agriculture which comes from Mixed Farming. When every farmer comes to that point when he knows that his land is a medium through which crude fertilizing elements pass in becoming food—vegetables, fruits, grains, flesh—he will feel the importance of a variety of products—a rotation of crops—and the value of animals in the economy of the farm. As our country grows older from necessity, if for no other reason, farmers will be more thorough students of their profession.

Alkali Soils.—"Red River," Grand Forks, Dakota, writes, there are patches of a few acres, in a place where the soil is so filled with alkali that nothing will grow on them, and asks why it is only in patches, and if anything can be done to get rid of it.... These alkaline patches appear when the subsoil is so impervious as to prevent all natural drainage. The water does not drain off after the rains, but is evaporated; water is continually brought to the surface from the subsoil by capillary attraction, and the salts it contains (Lime, Soda, and Potash), are left on the surface. The tronble can be remedied by draining, or by draining and irrigation. Drainage will give the water a chance to pass off, and in time the rains will wash out the excess of alkali. If irrigation can be employed, this washing out process will be much hastened. Irrigation without drainage would be of no use, for when the surface became dry again, the old state of things is restored. In some portions of Colorado, the reclaimed alkali soils are regarded as their most valuable land.

Tree Peddlers Again.—"J. M. L.," Vienna, Kans., writes that three persons came to his town pretending to be agents of a certain nursery in Illinois. They offered "Russian apples at $1 each, claiming them to be imported from Russia at one year old, and to be borer proof, pear trees grown one year in France, and far superior to anything ever offered in this country, cherry trees grown one year in England, and peaches grown one year in Canada, and far superior to native trees."—We never heard of the nursery that these parties claim to represent, still there may be such. "They also claim that there are but four nurseries that import fruit in this way two of them in New York, one in Ohio, and this one in Illinois." Our correspondent asks: "Are there such apples as Russian Borer-proof, and are fruit trees imported in the manner stated, or is the whole thing a swindle, and is there any way to get out of receiving the stock ordered?"—We get every spring and fall more or less letters of the same purport, from persons, who, persuaded by the representations of "nursery agents," give them orders, and afterwards suspecting that the stories are not true, repent of their haste, and write to ask if they are obliged to abide by their agreement. Of course if one has ordered trees under false representations, he can not be bound by his agreement. The trouble will be to prove that the representations are false. If the truth is known, it will probably turn out that every one who ordered trees from these chaps has signed a note which is held against him. They got the name by asking for his address, or in some other way. The chance of repudiating the order will depend upon what kind of a judge or justice "dispenses with the law" in the locality. Take the case in point: Russian apples are not "borer-proof," and they are only to be preferred to other apples in localities where their probable greater hardiness will allow them to endure the climate. Kansas does not need them. Pear, cherry, and peach trees of one year old, are not generally imported from the countries named, still it can not be *proved* that the trees were not imported. If it was claimed that the trees were any better for being grown a year in another country, that is a false representation. We have little doubt that the whole affair is a swindle. The trouble will be to convince the court of that should the case be brought up. All anxiety and trouble may be saved, as well as the future disappointment when the trees come into bearing, by the exercise of a proper caution. Every one should know that growing a peach in Canada, or a cherry tree in England, will in no manner alter its nature, and the mere fact that an apple was raised from the seed in Russia can not possibly protect its trunk from a Yankee borer. Still another way of avoiding trouble with tree peddlers, is not to buy of them at all, but purchase of well-known nurserymen.

Sorghum in America—Its Introduction.

An Interesting Bit of History.

In the spring of 1856, the Editor of the *American Agriculturist* received a small parcel of Sorghum seed from Messrs. Vilmorin, Andreux & Co., the noted seedsmen of Paris, who had brought it from China. It was planted in rich garden soil, and grew 13 to 15 feet high, maturing its seed well. The children of the neighborhood found the juices of the stalks so sweet that they used up a large part of the three rows 25 feet in length. A sketch of one of the plants was made and published, with a description, in this journal for February, 1857. It was subsequently announced that the seed would be distributed among our readers, to be divided equally among all who should send an envelope directed to themselves—say from 25 to 50 seeds each. This publication brought samples to the office from three other parties within 30 miles of N. Y. City. Soon after a stranger came in and tried hard to buy all our seed. When his offer reached $8.00 a pound, he was informed that it would not be sold at any price, as it was already *promised* to our readers. He then produced a newspaper item from the West, where he had been traveling, and said the interest was so great that he could divide a pound into a hundred or more parcels and sell them quickly at $1.00 a parcel. As soon as he left the office, the Editor sent out and bought all the seed in the three localities he had heard of, at $5 a pound. At the same time he wrote to the Paris seedsmen to send him all the seed they had, and draw on him for the pay. To his surprise—consternation almost—they returned word by the next steamer that they had shipped **1,000** lbs. (no Atlantic Cable then) and held 600 lbs. more to his order. The whole was ordered at once, and when the 1,000 lbs. arrived it was immediately announced that none of it would be sold, but that a packet of at least 400 seeds would be *presented* to any reader of the *American Agriculturist* who desired it—enough to experiment with and to provide an abundant supply of plants the next year if it proved valuable. *Thirty-One Thousand* (31,000) Parcels were distributed to our readers throughout the country, and planted. Enough was saved and sent to Georgia to grow 34,500 lbs. (17¼ tons) of seed, during the summer of 1857. This was sent to this office, and a full pound given to every reader desiring it for 1858—over 30,000 pound parcels were thus distributed.

From the above seed thus widely and freely scattered was produced at least nine-tenths of all the Sorghum grown in this country. (A small quantity was sent out from the Patent Office, and some sold by dealers). Hundreds of millions of gallons of syrup were made and used during the war when the usual supply o Southern grown sugar was cut off. It was worth many millions of dollars to the country. But such difficulty was experienced in producing good *sugar* that the cultivation fell off after the supply of Sonth grown sugar came in. Quite a "boom" was started later on by high claims asserted for a variety called the African "Imphee," but this soon died out. Recently, the improved processes of obtaining the saccharine matter in crystalline form, as sugar, have given a new impetus, and very promising results are anticipated, as noted on pages 101-102.

Catalogues Received.

When a catalogue includes more than one department of business—as Nursery and Greenhouse, we, as heretofore, place it under what appears to be the leading branch.

SEEDSMEN.

HUGO BEYER, New London, Iowa.—Besides Vegetable and Flower Seeds offers Greenhouse Plants, Bulbs, etc.

J. BOLGIANO & SON, No. 28 South Calvert Street, Baltimore, Md.—One of the oldest houses in the country, and has several novelties, including the Queen Tomato.

ALFRED BRIDGEMAN, No. 876 Broadway, New York.—A year older than the above; a very compact, and ably illustrated list of everything in the trade.

JOHN LEWIS CHILD, Queens, Queens Co., N. Y.—Flower Seeds in half dime packets. Bulbs and Greenhouse Plants. Illustrated.

COLE & BROTHERS, Pella, Iowa.—Vegetable, Flower, and Farm Seeds; full, compact and illustrated.

CROSSMAN BROS., 300 Munroe Avenue, Rochester, N. Y.—A wholesale list of Vegetable and Field Seeds.

J. A. FOOTE, Terre Haute, Ind.—Vegetable and Farm and Flower Seeds. Neat, compact, and business like.

JAMES J. H. GREGORY, Marblehead, Mass.—Characteristic in every feature, especially in the many novelties and specialties. Also the Hubbard Squash.

E. M. HAVEN, Bloomingdale, Van Buren Co., Mich.—Vegetable Seeds and Hot-bed and Garden Vegetable Plants.

THOMAS MEEHAN, Germantown, Pa.—Special list of Tree, Shrub, and Fruit-tree Seeds.

T. M. METCALF, St. Paul, Minn., offer largely the growth of their "North Star Seed Farms." Also Small Fruits and Forest Tree Seedlings.

E. A. REEVES, No. 68 Cortlandt Street, New York, sends a neat illustrated list of Vegetable and Farm Seeds, and another for Flower Seeds, both very full and complete.

I. J. SIMONSON, No. 63 Barclay Street.—Send out separate catalogues for Vegetable and Flower Seeds, the selection in both very large.

WM. W. STERLING, Cutchogue, N. Y.—A select list of Vegetable Seeds of his own growing.

JAMES M. THORBURN & Co., No. 15 John Street, N. Y.—For nearly 80 years Thorburn's seed store has been known to New Yorkers; the catalogue is a wonder of capaciousness and compactness, and presents an innovation by being illustrated.

NURSERYMEN.

GARRET H. BANTA, Riverdale, Bergen Co., N. J.—A select list of Fruit and Ornamental Stock, Evergreens, etc.

CHERRY & NEUSON, Nashville, Tenn.—Besides Fruits, of which there are many Southern varieties, very full in Evergreen and other Ornamental Trees and Shrubs.

JOHN S. COLLINS, Moorestown, N. J., sends his wholesale list of Small Fruits, etc.

ROBT. DOUGLASS & SONS, Waukegan, Ill.—To their usual wholesale list of Evergreen and Ornamental Tree seedlings add much interesting descriptive matter. Also a list of Forest Trees by mail.

ELLWANGER & BARRY, Rochester, N. Y., send a special list of Strawberries, with useful directions for culture.

THE GOULD NURSERY, Beaver Dam, Wis.—Selections with special reference to the climate of the Northwest in Fruits and Ornamental Stock.

CHARLES A. GREEN, Clinton, Munroe Co., N. Y.—Small Fruits, accompanied by a treatise on their culture.

DAVID HILL, Dundee, Ill.—Wholesale list of Evergreen and Forest Tree Seedlings, also older stock and Fruit Trees, etc.

KING & MURRAY, Flushing, N. Y.—This, the Bloodgood Nursery, shows no signs of age in its catalogue, except the statement that it was established in 1790.

J. T. LOVETT, Little Silver, Monmouth Co., N. J.—A full catalogue of Small Fruits with various specialties.

T. V. MUNSON, Denison, Texas.—Fruit and Ornamental Stock, with special reference to the wants of the State.

JOHN C. NELTNOR, Turner Junction, Ill.—Two very neat, compact, and comprehensive lists, one of general Nursery Stock, and the other devoted to Strawberries, with descriptions.

C. M. SILVA & SON, Newcastle, Cal.—Fruit and Ornamental Trees suited to the Pacific coast.

W. C. STEELE, Laporte, Ind.—A price list of Small Fruits in great variety.

H. M. THOMPSON & SON, St. Francis, Wis.—Seedlings of Evergreen and Deciduous Trees, Fruits and Tree and Shrub Seeds. Wholesale list.

B. F. TRANSOU & Co., Humboldt, Tenn.—A genera stock of varieties best suited to the State, some of which are local.

F. TROWBRIDGE, Milford, Conn.—A Cranberry circular.

E. B. UNDERHILL, Poughkeepsie, N. Y., sends a neat and well classified list of Small Fruits, or "berry plants."

JOHN VAN LOON, New Amsterdam, Wis.—Small Fruits and others, with special reference to hardiness. Seeds and Ornamental Plants.

GEO. S. WALES, Rochester, N. Y.—Small Fruits, specialties in Vegetable Seeds and Vegetable Plants, also a treatise on Strawberry culture.

ZIEMERMAN BROS., Cameron, Mo.—A collection of Fruit and Ornamental Stock suited to the climate.

FLORISTS.

THOMAS ELVERSON, New Brighton, Beaver Co., Pa.—Very full and excellent list of greenhouse and other Plants.

PETER HENDERSON, No. 35 Cortlandt Street, N. Y.—A special low rate list for collections of Plants.

LEEDS & Co., Richmond, Ind.—Both wholesale and retail lists, including many novelties. Roses a specialty.

ARNOLD PUETZ, Jacksonville, Fla.—Plants, Bulbs, Rustic work, and young Alligators.

WM. B. REED, Chambersburg, Pa.—Special Rose list and greenhouse Plants.

A. WHITCOMB, Lawrance, Kan.—A choice selection, including novelties in the usual "neat as a pin" style.

LIVE STOCK.

A. G. ATKINS, Orange, N. J.—Jersey Cattle, Berkshires, and Fowls of choice breeds,

BAKER & HARRIGAN, Comstocks, Washington Co., N. Y.—A large list of Trotting stock with pedigrees.

E. DILLON & Co., Bloomington, Ill.—Illustrated catalogue of their immense stock of Norman French Horses.

L. L. REED, Auburn, Ohio.—Thorough-bred stock from Pigs to Pigeons.

A. M. SHEPERD, Sand Brook, N. J.—The leading varieties of Fowls and their eggs.

L. B. SILVER, Cleveland, O.—Catalogue of "Ohio Improved Chester Swine."

MACHINERY AND MISCELLANEOUS.

J. L. CASE & Co., Racine, Wis.—A Farmer's Guide Book, which is a complete almanac, besides setting forth Separators and Powers.

THE CHICAGO SCRAPER AND DITCHER Co., at Chicago and Maywood, Ill., set forth the merits of their Screw Pulverizer, and illustrate it in a comprehensive circular of over 40 pages.

A. B. COHU, 197 Water Street, N. Y.—An immense variety of Farm Implements and Machinery, with many specialties and novelties.

EUREKA MOWER Co., Towanda, Pa.—Illustrate their direct Draft Mower, Eureka, in several forms.

WILSON L. GILL, Columbus, O.—Plows in great variety illustrated and described.

HEEBNER & SONS, Lansdale, Pa.—Horse Powers, Threshers, Sawing Machines, etc.

H. W. HILL & Co., Decatur, Ill., set forth their numerous hardware specialties, Hog Rings, Animal Markers, etc., in a handsome pamphlet, and also in a humorous sheet entitled "That Hog of Mine."

A. MCCREADY & BRO., New Galilee, Pa.—Excelsior (Dog) Churn Power.

MILLBURN WAGON COMPANY, Toledo, O.—A catalogue of Carts, Farm Wagons, Buggies, etc., beautifully illustrated and concisely described.

OPPENHEIM MANUFACTURING COMPANY, New Haven, Conn.—The Oppenheim Double Buggy illustrated in several forms by handsome photographs.

RANKIN REFRIGERATOR Co., New York.—Cooling and Ice Making Apparatus.

GEO. F. SHEDD, Waltham, Mass.—Portable Steam Engines.

S. E. & J. M. SPROUT, Nuney, Pa.—The Williams Evaporator.

FOREIGN CATALOGUES.

JOHN A. BRUCE & Co., Hamilton, Canada.—A full and illustrated catalogue of Seeds of all kinds.

F. C. HEINEMANN, Erfurt, Prussia.—Catalogue of Seeds, Fruits, Plants, Bulbs, etc., and an immense one it is.

STATEMENT

OF

The Mutual Life Insurance Company of New York,

F. S. WINSTON, President,

For the Year ending December 31st, 1879.

Annuity Account.

	No.	Ann. Pay'ts.		No.	Ann. Pay'ts.
Annuities in force, Jan. 1, 1879..	53	$20,549 09	Annuities in force, Jan. 1, 1880..	49	$18,504 97
Premium Annuities.....		5,981 63	Premium Annuities.....		5,289 31
Annuities Issued.....	2	701 00	Annuities Terminated.....	6	3,437 44
	55	$27,231 72		55	$27,231 72

Insurance Account.

	No.	Amount.		No.	Amount.
Policies in force, Jan. 1, 1879..91,828		$290,774,315	Policies in force, Jan. 1, 1880..95,423		$298,760,867
Risks Assumed.....12,210		38,394,554	Risks Terminated 8,615		30,408,002
	104,038	$329,168,869		104,038	$329,168,869

Revenue Account.

Dr.		*Cr.*	
To Balance from last account.....	$84,174,076 42	By paid Death and Endowments Claims (matured and discounted)...	$7,007,195 25
" Premiums received.....	12,687,881 72	" " Annuities.....	25,080 76
" Interest and Rents.....	4,942,211 70	" " Dividends.....	3,427,479 60
		" " Surrendered Policies and Additions.....	3,555,800 41
		" " Commissions (payment of current and extinguishment of future).....	668,942 76
		" " Contingent Guarantee Account.....	302,908 08
		" " Taxes and Assessments.....	350,324 26
		" " Expenses.....	700,943 60
		" Balance to New Account.....	85,765,515 08
	$101,804,169 84		$101,804,169 84

Balance Sheet.

Dr.		*Cr.*	
To Reserve at four per cent.....	$83,210,134 00	By Bonds Secured by Mortgages on Real Estate.....	$54,805,134 77
" Claims by death not yet due.....	629,895 00	" United States and other Bonds....	18,917,618 12
" Premiums paid in advance.....	103,592 64	" Loans on U. S. Bonds.....	2,100,000 00
" Surplus and Contingent Guarantee Fund.....	4,520,373 17	" Real Estate.....	7,811,805 18
		" Cash in Banks and Trust Companies at interest.....	2,363,337 28
		" Interest accrued.....	1,397,601 07
		" Premiums deferred, quarterly and semi-annual.....	809,705 97
		" Premiums in transit, principally for December.....	99,774 35
		" Balances due by Agents.....	68,358 07
	$88,462,994 81		$88,462,994 81

NOTE.—If the New York Standard of four and half per cent Interest be used, the Surplus is Eleven million one hundred and forty-one thousand, forty-one dollars and four cents.

From the Surplus, as appears by the Balance Sheet, a dividend larger on policies paying the old rates than that for the previous year, also on other policies in proportion, will be awarded to such as shall be in force at their anniversaries in 1880.

The rates for life insurance in this Company were reduced in 1879.

New York, January 22, 1880.

BOARD OF TRUSTEES.

FREDERICK S. WINSTON, ROBERT H. MCCURDY, WILLIAM BETTS, LL.D., SAMUEL E. SPROULLS, SAMUEL M. CORNELL, LUCIUS ROBINSON, WILLIAM SMITH BROWN, WILLIAM H. POPHAM, SAMUEL D. BABCOCK,

HENRY A. SMYTHE, WILLIAM E. DODGE, GEORGE S. COE, JOHN E. DEVELIN, MARTIN BATES, WILLIAM A. HAINES, SEYMOUR L. HUSTED, OLIVER H. PALMER, HENRY E. DAVIES,

RICHARD A. MCCURDY, JAMES C. HOLDEN, HERMANN C. VON POST, GEORGE C. RICHARDSON ALEXANDER H. RICE, WILLIAM F. BABCOCK, F. RATCHFORD STARR, FREDERICK H. COSSITT, LEWIS MAY,

OLIVER HARRIMAN, THOMAS DICKSON, HENRY W. SMITH, JOHN H. SHERWOOD, GEORGE H. ANDREWS, ROBERT OLYPHANT, GEO. F. BAKER, JOS. THOMPSON, BENJ. B. SHERMAN,

TREES ROSES SHRUBS

The largest and most Complete Stock of Fruit and Ornamental Trees in the U. S. Priced Catalogues sent as follows: No. 1, Fruits, (new ed.) with plate, 15 cts.; plain, 10 cts. No. 2. Ornamental Trees, etc., (new ed.) with Plate, 25 cts.; plain, 15 cts. No. 3, Greenhouse, Free. No. 4, Wholesale, Free, and No. 5, Catalogue of Roses, with beautiful plate of New and Rare Roses, 10 cts.; plain, Free. No. 7, Catalogue of Strawberries, with plate, Free. Address,

ELLWANGER & BARRY, Rochester, N. Y.

NEW ROSES.

Bennett's Hybrid Teas.—Combining the hardiness and brilliant colors of the Remontant Roses, with the sweet perfume, perpetual blooming qualities, and soft shades of the Tea Roses. The best of the other new sorts are also offered. Descriptive list sent free on application—with colored plate of five choice sorts, 10c. Our Descriptive Catalogue of old, standard sorts (3d edition, 1879), free.

ELLWANGER & BARRY, Rochester, N. Y.

STRAWBERRY PLANTS

E. P. Roe Offers one of the largest and finest stock of SMALL FRUIT PLANTS AND GRAPEVINES ever grown in this country. Prices very reasonable. Also a superbly illustrated book, "SUCCESS WITH SMALL FRUITS," with a very liberal offer. Also the original stock of the celebrated CUTHBERT RASPBERRY secured by special outlay. Send for illustrated catalogue. Address

E. P. ROE, Cornwall-on-Hudson, N. Y.

200,000 WILSON'S ALBANY & CRESCENT Seedling Strawberry Plants, at *specially low rates*, neatly tied in 100s. Also other Small Fruit Plants and Ornamental Stock low. WM. F. BASSETT, Bellevue Avenue Nurseries, Hammonton, N. J.

SEEDS AND PLANTS. 100,000 Grapevines. Cuthbert Raspberry, And other small Fruits in large quantities and at low prices. **PURE AND FRESH GARDEN SEEDS.**

W. L. FERRIS, Jr., *Successor to Ferris, Minard & Co.*, **385 and 387 Main St., Poughkeepsie, N. Y.**

D. E. HOXIE, Northampton, Mass.

SMALL FRUIT PLANTS,

Compton Corn, Prickly Comfrey, etc. Circular free.

500 Sharpless Seedling Strawberry
500 Miner's Gt. Prolific "
500 Crescent Seedling "
$5.00.

Strawberries, Raspberries, Grapes Vines, Fruit Trees. Price List free. S. C. DE COU, Moorestown, Burlington Co., N. J.

RELIABLE BERRY PLANTS

CHEAP. OVER 100 KINDS. For Circular, with Prices and Opinions, address

E. B. UNDERHILL, Poughkeepsie, N. Y.

3999999 Fruit Plants, Vines, Trees, etc. Best of stock, at lowest living rates. See some prices page 115, or send for J. S. COLLINS' Catalogue.

RUTTER ON THE PEACH, a new practical treatise from 30 years' experience in successful peach-growing in Pennsylvania and Maryland. Cause of, and remedies for, "*Yellows*" and other diseases in the tree. Price, **$1.** Address,

J. RUTTER, West Chester, Pa.

FRUIT TREES. APPLE, PEAR, PLUM, CHERRY, PEACH, and QUINCES. American and Spanish Chestnuts. 50 Acres of Ornamental Trees. Shrubs, Roses, etc. Osage Orange. A Descriptive Catalogue sent free.

WILLIAM H. MOON, *Morrisville, Pa.*
30 miles from Phil., 20 miles from N. Y., on Pa. or D. & B. R. R. R. T.

PEACH AND PLUM TREES. BLACKBERRIES, Raspberries, Crescent and other varieties of Strawberry Plants. C. H. DIX, Bricksburg, N. J.

SENT FREE.

Treatise on improved methods for evaporating fruits, berries, vegetables, etc. Tables, yields, prices, profits, demand, and general Statistics. AMOS STOUFFER, Chambersburg, Pa.

LANE'S SUGAR-BEET SEED.

The best Root for feeding Stock. 40 tons raised per acre. Send for circular.

HENRY LANE, Cornwall, Vt.

FRUIT AND ORNAMENTAL Trees!

LARGE STOCK. LOW RATES.

STANDARD PEAR TREES A SPECIALTY.

Send stamp for Trade List. AGENTS WANTED.

E. MOODY & SONS, Lockport, N. Y.

NIAGARA NURSERIES. Established 1839.

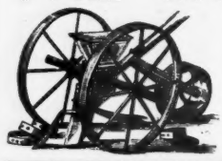
WE HAVE NEVER BEFORE manufactured such a variety of Garden Plows, Wheel Hoes, and Seed Sowers. **WE HAVE NEVER BEFORE** offered Tools so well made, beautifully finished, and so perfect in practice. **WE HAVE NEVER BEFORE** combined so well, variety of work with perfection and ease of operation. These machines quickly save first cost. They are prominent *Agriculturist* **Premiums,** and JAS. VICK says he has never sold any so popular. Correspondence is particularly solicited, and descriptive catalogues with numerous engravings are sent FREE.

L. S. ALLEN & CO., 229 Market St., Phila., Pa., Man'frs of Planet Jr. goods.

JOSEPH BRECK & SON, Boston, Mass., General Agents for New England

STEELE BROS. & CO., Toronto, Canada, Agents for Ontario.

THE MONITOR SEED DRILL.



This is the most complete and positive **Seed Drill** ever invented. It is radically different from and superior to all others. It is the **only** machine which measures and drops the seed with a positive motion, and exactly the same amount at each foot or yard. It has been tested by 6 years' use in Massachusetts, and was awarded the **highest prize** at the "Centennial." ☞ The "**MONITOR**" has been thoroughly tested during the seasons of 1878 and 1879, and heartily endorsed as a

FIRST-CLASS MACHINE

by Professor Geo. Thurber, of New Jersey, and by Jas. Vick, of Rochester, N. Y.

☞ **Agents Wanted.**—For full descriptive circular and testimonials, address

THE MERRIMAC MACHINE CO., Newburyport, Mass.

Vegetable AND Flower SEED **SEEDS** For Everybody. **POTATOES. SECOND TO NONE.** **Guaranteed**

100,000 NAMES and addresses wanted. J. A. EVERITT, Box 229, Watsontown, Pa.

APPLE & PEACH TREES BY MAIL.

Over 100 varieties of each kind, suited to all sections. A full list of the new, long keeping Apples, Queen of the Market and Reliance Raspberry, Sharpless and other Strawberries, Japan Persimmons,—with a full line of No. 1 stock in variety. Root Grafts put up to order. A 65 page Catalogue mailed gratis to all applicants.

RANDOLPH PETERS, Wilmington, Delaware.

FOR TREES! FLOWERS!!

AT WHOLESALE OR RETAIL send to the

BLOOMINGTON NURSERY,

Established 28 years—600 Acres—13 Greenhouses. The following are now ready for distribution—**New General Descriptive Catalogue, 25c. New Plant** Catalogue and **Price List free.** Address

BAIRD & TUTTLE, Agents, Bloomington, Ills.

A Large Lot of Low Stocky Peach Trees,

ESPECIALLY DESIRABLE for SHIPPING LONG DISTANCES.

The old stand for the Cuthbert Raspberry.

A. HANCE & SON, Red Bank, N.J.

NATIVE EVERGREENS.

Balsam Fir, Arbor Vitæ, White Pine, Spruce, and Hemlock, also Larch, 5 to 12 inches, at $3 per 1,000; $10 for 5,000. Packing free. JAMES A. ROOT, Skaneateles, N. Y.

TREES The most *complete* assortment in the West. A particularly fine lot of *Standard Pear Trees.* Full stock of *Apple, Plum, Pear, Peach, Cherry, Quince,* etc. A select lot of *Grapes, Gooseberries, Raspberries, Currants, Strawberries,* etc., etc. An immense stock of **EVERGREENS** both common and **NEW AND RARE, at bottom prices.** *Ornamental Deciduous Trees, Shrubs, Vines, Roses,* etc., etc. Large lot of *Greenhouse Plants.* Trade-List and Greenhouse Catalogues **free.** Descriptive Catalogue, **10 cts.** **27th Year. 400 Acres. 15 Greenhouses.**

STORRS, HARRISON & CO.

PAINESVILLE, LAKE CO., OHIO.

Evergreens and Eur'o. Larch

I offer for the coming spring, a very large stock from six inches to six feet high, first-class stock. Prices low. Also Apple and Cherry trees, Grape-Vines, etc. Price-list free. Address, **D. HILL, Dundee Nursery, Kane County, Ill.**

Evergreen and Forest Tree Seedlings. LARGEST Stock in America. All Nursery grown. Catalpa Speciosa, and other forest trees by mail. Robert Douglas & Sons, Waukegan, Ill.

$10 orders entitle buyers to price 10 plants or trees of a sort at 1,000 rates. Liberal offer. J. S. COLLINS.

Choice assortment. **Strong, healthy plants,** in colors of White, Carmine, Rose, Yellow, Orange, Scarlet, Variegated, etc., sent safely by mail, **6** for **50c.**; **14** for **$1.** *Extra choice* Fancy Varieties, **4** for **50c.**; **8** for **$1.** ☞ Illustrated Priced Catalogue **free.** Cuttings of new Geraniums, by mail, **50c.** per doz.

Chas. T. Starr, Avondale, Chester Co., Pa.

$1.00 $1.00

Flower Garden

13 Monthly Blooming **Roses,** or **22** Splendid **Verbenas, $1.**
4 Geraniums, 4 Abutilons, and **4 Begonias** or **12 Carnations, $1.**
4 Fuchsias, 4 Carnations, and **4 Double Petunias,** all different, **$1.**
4 Calla Lilies, 4 Tuberoses and **4 Smilax** or **12 Geraniums, $1.**
5 Heliotropes, 5 Lantanas and **5 Chrysanthemums** or **10 Fuchsias $1.**
2 Golden Tricolor, 4 Silene and **2 Happy Thought Geraniums, $1.**

Sent by mail postage paid, or the **6** collections per express for **$5.**

Illustrated catalogue sent free on application.

W. V. SKED & CO., Successors to SKED, PADDOCK & CO., **Cleveland, O.**

NATIVE PLANTS.

400 species, including Orchids, Vines, Shrubs, Lilies, Aquatic and Bog Plants, 80 species of Ferns, White Pond Lily roots, Southern Pitcher Plants, etc., etc. Botanical and Common names given. Send for Catalogue.

EDWARD GILLETT, Southwick, Mass.

HONEY LOCUST HEDGES, 50 cts. per lb., mail free. $12 per bushel. Cherry, Plum, and 300 kinds of Tree and Fruit Seeds. See catalogue. THOMAS MEEHAN, Nurseryman and Tree-Seedsman, Germantown, Phila.

GIVEN AWAY New Scarlet Striped Geranium **NEW LIFE!** By mail, paid. To any one sending us **$1.25** for **5** plants of this Geranium, we will *add a plant gratis.* A single plant mailed free for **40c.** ☞ Our Catalogue containing Colored Plate of above Geranium **free.** We also send by mail, prepaid, **13 Ever-Blooming Roses,** flowering size, labeled, for **$1.25.**

INNISFALLEN GREENHOUSES, Springfield, O.

CAT-TAIL MILLET,

ALSO KNOWN AS

"HORSE" or "PEARL" MILLET,

50c. per lb. by mail, 25c. by express. Chufas, 50c. per qt. by mail; Southern Field, or Cow Peas, 50c. per qt.; Fat Horse Beans 25c. per pkt. by mail. Send for price-list of many new and improved Standard Seeds.

MARK W. JOHNSON & CO., 27 Marietta Street, Atlanta, Ga.

CRANBERRY PLANTS

In variety by mail. New varieties, ripen early, and prolific bearers. Send for circular giving mode of culture, soil, price, etc. **F. TROWBRIDGE, Milford, Ct.**

C. C. ASPARAGUS OSAGE ORANGE (1 and 2 year, extra fine). Small Fruits, Shade Fruit Trees, Evergreens, and general Nursery stock. ☞ Also BURBANK'S SEEDLING POTATOES, $1.25 a bushel; SMALL SNOWFLAKE, $1 a bushel. New bags, to hold 1½ bushels 25c. each. F. C. BIDDLE, Brandywine Nursery, Chadd's Ford, Pa.

WILLIAMS, E. & J. C., MONTCLAIR, N. J., ALL THE LEADING FRUITS, SEED POTATOES, ETC., STRICTLY PURE, NO. 1 STOCK, AT REASONABLE PRICES. CATALOGUE FREE.

ST. PATRICK POTATOES. GENUINE. 45 cents per lb., 5 lbs. $2.00, by mail, prepaid. **M. H. STEVENS, Pittston, Pa.**

READER If you love rare flowers, *choicest only,* address **ELLIS BROS., Keene, N. H.** It will astonish and please. FREE.

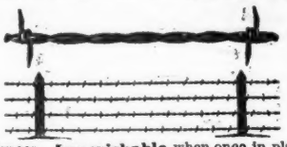
FARMER WANTED—Competent to take a 100 acre Jersey farm on Shares. Address L. B., Box 200, Elizabeth, N. J.

STEEL BARB FENCE,

Solves the **FENCE** Problem by meeting all the requisites of

THE PERFECT FARM FENCE.

Every Land Owner should not fail to examine the merits of this fence. It is cheaper than all others. Easiest handled, and in fact just what the people of the treeless States have needed for years.



To All Inquirers.

It is an impassable barrier, yet harmless. Prohibits trespassing. It can be put up by any one, and is compactly put up for transportation. It fact, it is the only fence dog and wolf proof.

Cheaper than Wooden Fences. **Imperishable** when once in place. **Indestructible** by the Elements. Waste no soil by SHADE. Has **no Weedy Fence Borders. Shelters no Enemies of the Crops.** A **Protection** at all seasons. It is **easy of Construction.** It needs **no repairs.** Accumulates **no snow-drifts.**

A STEEL THORN HEDGE.

Impassable Barrier. Prohibits all Trespassing. It can not be destroyed by fire, wind, or flood.

100,000 miles of Barb Fence have been erected in 1876, 1877, 1878. Agriculturists, Herdsmen, Sheep Husbandmen, Ranchmen, Vineyard Proprietors, Orchardists, Nurserymen, Railroad Companies, Road Proprietors, and all owners and occupants of soil and areas to be protected.

Manufactured by Washburn & Moen Manufacturing Co.,
WORCESTER, MASS., and 21 CLIFF ST., NEW YORK.

Powell's Iron Fence Posts

For Barb Wire, Iron, or Gas Pipe Fencing.

Cheap, Strong, and Durable. No Digging Required.

DIRECTIONS FOR SETTING POSTS.

First drive post with wrought iron guide in place, then drive cross-pieces through guide, which renders it more immovable than any other post, in the setting of which the ground must be displaced.

PAT'D APRIL 1st, 1879.

We make Line Posts, also End and Corner Posts, either painted or galvanized, and Wire Strainers of an Improved Pattern.

ABRAM G. POWELL & CO.,
829 Willow St., Philadelphia, Pa.

FRENTRESS

STEEL BARBED FENCE WIRE

(Patented Dec. 14, 1875—Reissued May 22, 1877.)

The Best and most Durable of all the Barbed Wires in Use.

A sure protection, cheaper than board or rail fence, and good for a life-time. Wastes no ground. **Has no weedy fence row.** When the best costs no more than an inferior article, always look for the **best.** We claim for the **Frentress a Superiority over all other Wires.** For Circulars and Price Lists address

FRENTRESS BARBED WIRE FENCE CO., East Dubuque, Illinois.

THE LATEST IMPROVEMENT IN BARB FENCE.

The cut shows exact size of strand and distance apart of barbs. Not dangerous to horses or stock. Price the same by the pound or rod. **SAMPLES SENT FREE TO ANY ADDRESS.**
AMERICAN BARB FENCE CO., 60 Clark St., Chicago, Ills.

Big Giant Corn Mill,

Every Man His Own Miller.

The only Mill that will grind Corn with Shuck on without extra expense. The only Mill grinding Corn and Cob successfully, that will grind Shelled Corn fine enough for family use.

Grinds twice as fast as any other Mill of same size and price.

MANUFACTURED BY
J. A. FIELD, SON & CO., St. Louis, Mo., U. S. A., & Hamilton, Ont., Canada.

L. E. RANSOM, 34 MAIDEN LANE, N. Y. CITY, Importer of **Annatto** and **Dairy Coloring.**

I. X. L.

FEED MILL

All Iron but the Hopper.

Cheap, Effective, and Durable.

CAN BE RUN BY ANY POWER.

Capacity from 6 to 30 bushels per hour, according to size. Send for Catalogue and prices.

U. S. WIND ENGINE & PUMP CO.,
Batavia, Kane Co., Ill.

RUSSELL & CO.'S

PORTABLE FARM ENGINE,

WITH THEIR

"NEW MASSILLON" THRESHER,

Makes the Best THRESHING outfit known.

Ohio, Pennsylvania, and Wisconsin Testify.

From John Bechel, New Washington, Ohio.

Threshermen, look here. If you want a good machine this season buy the "New Massillon." It beats them all. No more growling about not threshing clean, or beater wrapping, or stirring at the riddles. That is all done away with. Start up in the morning and thresh till noon without stopping for anything.

I threshed 500 bushels of wheat and never stopped till all was out; could have threshed 300 bushels more before we had dinner.

Threshed 1,700 bushels of grain in one day; had to stake three times, and had to move two miles at that. The new riddle that is put in now cleans ready for market.

I threshed 55 bushels of timothy seed in two hours, and 135 bushels in one-half day. How is that for high. I can beat anything that travels the highway in threshing any kind of grain; don't care where they come from; don't except any of them.

Put the "Massillon" Engine and the "New Massillon" Separator together, and there isn't another machine made to beat it. Gentlemen, I am satisfied that I have the best machine in the United States. Have threshed twelve years and ought to know a little about threshing.

From Samuel Deppen, Herndon, Pa.

I had my threshing done this season by the "New Massillon" Separator and 10-Horse Traction Engine, and they gave me the best of satisfaction. It was the best work I ever had done. It threshes fast, takes all the grain out of the straw and chaff, separates and cleans it well, and don't cut or break it.

There is no choking or clogging of the machine.

From T. H. Austin, Janesville, Wis.

The No. 8 "New Massillon" Separator and 10-Horse Engine that I bought of your agent at this point, has given me the best of satisfaction, and after a full season's work I can say, without any hesitation, that it is a No. 1 outfit in every respect for fast and good work in all kinds of grain, and especially in timothy and flax. (A went long felt by every farmer, is now supplied by your "New Massillon.") I paid the cash for my outfit, after giving it the most severe tests, and being warned by agents and general agents of other so-called first class Machines and Engines that they were worthless.

But I bought your machine on my own judgment, paying very much more than I could have bought other machines for, and will say here that I can beat any or all who oppose you or your "New Massillon," for I can assure you that you have a world beater.

Address for Catalogue, Price Lists, and address of nearest agent,

RUSSELL & CO., Massillon, O.

Agricultural

Insurance Company, of Watertown, N. Y.

Capital $200,000.00. Net Surplus, $216,645.62. Total assets for the security of Policy-holders, January 1st, 1879, $1,150,063.99. Insures only Farm Property and Residences against fire and lightning. Takes no business risks.

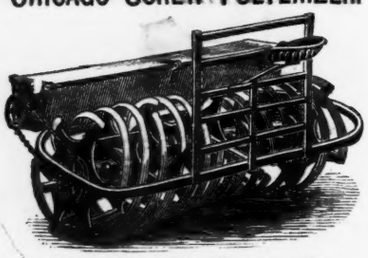
MILL MANUFACTORY

ESTABLISHED 1851.

Grist Mills of French Buhr Stone.

Portable Mills for Farmers, Saw Mills, etc. **18 Sizes and Styles. Over 2,000 in use.** $80 and upwards. Complete Mill and Sheller $65. A boy can grind and keep in order. Adapted to any kind of suitable power. Complete Flouring and Corn Mill. **ALL SIZES.** Send for Circular No. 28. **NORDYKE & MARMON CO., Indianapolis, Ind.**

CHICAGO SCREW PULVERIZER.



Does Pulverization pay?

ABILENE, KANSAS, Nov. 10, 1879.
I seeded 3,400 acres of wheat with these machines.... The stand of wheat is now the best I have ever seen on new land.
R. J. WEYMESS, Trustee.

DANVILLE, ILL., Dec. 4, 1876.
This year I harvested, on 190 acres, 6,100 bushels of wheat. ....In my opinion the Screw Pulverizer increased the crop one-third over what I could have got by any other method.
D. G. MOORE.

Send for pamphlet with cuts, and over sixty letters from men who have the machine. Address,

Chicago Scraper & Ditcher Co.,
34 METROPOLITAN BLOCK, CHICAGO, ILL.

NOTICE

To Every Farmer and Agent.

If you want a first-class, reliable, two-horse
GRAIN DRILL OR CORN PLANTER,
Do not fail to send for a complete explanatory circular and instructor of the

Farmers Friend
Grain and Fertilizer Drill.

The only one made having the celebrated never-failing **CONE GEAR** and **DOUBLE FORCE FEED**, and is sold everywhere with the greatest satisfaction to both purchasers and dealers. Also the reliable

MONARCH GRAIN DRILL.
The best adjustable Feed Drill made.

The Farmers Friend Corn Planter

Has all the good points and appliances of any other, besides many very desirable and important features exclusively our own.
All information given free by addressing
FARMERS FRIEND M'F'G CO., Dayton, O.

ICE TOOLS—Every description. A. B. COHU, 197 Water St., N. Y.

HAY CUTTERS. A. B. COHU, 197 Water St., N. Y.

CORN SHELLERS. A. B. COHU, 197 Water St., N. Y.

SEEDS—Hints About—Free. A. B. COHU, 197 Water St., N. Y.

Farmers Book—"Everything for the Farm," Mailed for 10 cents. A. B. COHU, 197 Water St., N. Y.

Champion of the World!
THE
Champion Grain Drill.

POSITIVE FORCE FEED GRASS SEEDER.

With or without Fertilizer Attachment or Gum Spring Hoes. It has a perfect force feed Grain Distributor that will sow accurately all kinds of grain without the least injury to the seed.

UNEQUALLED AS A CORN PLANTER.

Fertilizer attachment can be relied upon to sow all kinds of commercial manures whether dry or damp in any desired quantity. **Draft Light, Construction Simple, but durable.** Liberal discount to cash customers. Send for descriptive circular.

JOHNSON, GERE & TRUMAN.
Owego, Tioga Co., N. Y.

NICHOLS, SHEPARD & CO., Battle Creek, Mich.

Established in 1848. ORIGINAL AND ONLY GENUINE

"VIBRATOR"
Threshing Machinery and Portable and Traction Engines.

THE STANDARD of excellence *throughout the Grain-Raising World.*
MATCHLESS for Grain-Saving, Time-Saving, Perfect Cleaning, *Rapid and Thorough Work.*
INCOMPARABLE in *Quality* of Material, *Perfection* of Parts, *Thorough* Workmanship, *Elegant* Finish, and *Beauty* of Model.
MARVELOUS for *vastly superior* work in *all kinds* of Grain, and *universally* known as the *only* successful Thresher in Flax, Timothy, Clover, and all other Seeds.
ASTONISHINGLY DURABLE and *wonderfully simple*, using less than one half the usual gears and belts.
PORTABLE, TRACTION, and **STRAW-BURNING STEAM-ENGINES,** with special features of Power, Durability, Safety, Economy, and Beauty entirely unknown in other makes. Steam-Power Outfits and Steam-Power Separators a specialty. Four sizes of Separators, from 6 to 12 horse-power; also 2 styles Improved Mounted Horse-Powers.
53 Years of Prosperous and Continuous Business by this house, without change of name, location, or management, furnishes a strong guarantee for superior goods and honorable dealing.

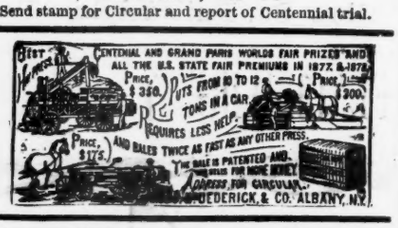
CAUTION! The wonderful success and popularity of our VIBRATOR Machinery has driven other machines to the wall; hence various makers are now attempting to build and palm off inferior and mongrel imitations of our famous goods.

BE NOT DECEIVED
by such experimental and worthless machinery. If you buy at all, **get the "ORIGINAL" and the "GENUINE"** from us.
☞ **For full particulars** call on our dealers, or write to us for Illustrated Circulars, which we mail free. Address
NICHOLS, SHEPARD & CO., Battle Creek, Mich.

MEDAL MACHINES.
New York State Agricultural Works.

First Premiums at all Competitive Trials.
Railway, Chain and Lever Horse Powers, Threshers and Cleaners, Threshers and Shakers, Clover Hullers, Feed Cutters, Wheel Horse Rakes, Corn Cultivators, Horse Pitchforks, Shingle Machines, Straw Preserving Rye Threshers, Portable Steam-Engines, Cider and Wine-Mills and Presses, Dog and Pony Powers, etc., etc.

WHEELER & MELICK CO.,
ALBANY, N. Y.
Send stamp for Circular and report of Centennial trial.


CENTENNIAL AND GRAND PARIS WORLDS FAIR PRIZES AND ALL THE U.S. STATE FAIR PREMIUMS IN 1877 & 1878.
PUTS FROM 10 TO 12 TONS IN A CAR.
REQUIRES LESS HELP.
AND BALES TWICE AS FAST AS ANY OTHER PRESS.
THE BALE IS PATENTED AND
FREDERICK & CO. ALBANY, N.Y.

HEEBNER'S HORSE POWERS
WITH
Patent Level Tread
AND
SPEED REGULATOR.
Heebner's Improved Little Giant Threshers.

HEEBNER & SONS, Lansdale, Mont. Co., Pa.

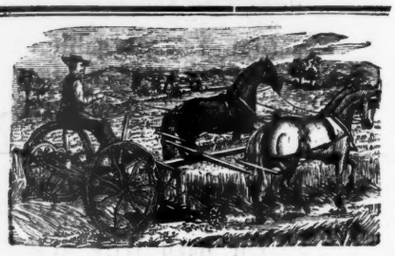
Union Railway Horse Power.

THRESHERS AND SEPARATORS.
These Powers are
GUARANTEED
to produce more Power with
LESS ELEVATION
than any other Railway Power. Send for descriptive catalogue. WM. L. BOYER & BRO., 2,101 Germantown Ave., Phila., Pa.

Also, manufacturers of the PREMIUM FARM GRIST MILL.

Gardner's Railway Pitching Apparatus.

Consisting of Carrier, Grappling Fork, Pulleys, and Hooks. For unloading Hay, Grain, Beans, Corn Stalks, loose or in bundles, etc. Can be used in any barn. Also, Improved Stacking Apparatus. Send for Circular, and get valuable information.
E. V. R. Gardner & Co.,
Johnson's, Orange Co., N. Y.



WILBER'S DIRECT DRAFT
EUREKA MOWER
Is the LARGEST, CHEAPEST, and
Lightest Draft Mower in the World.
☞ It lessens the expense of gathering the Hay Crop fully twenty-five per cent. Address
EUREKA MOWER COMPANY,
Towanda, Bradford Co., Pa.

CHALLENGE FEED MILLS.
Grinds three times as fast as any other mills. Always successful. Over 500 First Premiums and Medals. Over 15,000 in use. They do not clog or heat; grinds 60 bushels per hour. All successful Iron Feed Mills INFRINGING OUR PATENTS. Beware! Buy none but the best. Remember the Courts have sustained our Patents. Also the best Wind Mills, Corn Shellers, Horse Power Wood Saws, Fanning Mills, and Pumps. Address CHALLENGE MILL CO., Batavia, Ill.

Received Medal AND HIGHEST AWARD

OF MERIT AT CENTENNIAL.
Send for Catalogue.

STEAM ENGINES,
A. B. FARQUHAR, York, Pa.,

Cheapest and best for all purposes—simple, strong, and durable. Also Horse Powers and Gin Gear.
SAW, GRIST AND COB MILLS, GINS, PRESSES AND MACHINERY generally. Inquiries promptly answered.

Vertical Engines, with or without wheels, very convenient, economical and complete in every detail, best and cheapest Vertical in the world. Fig. 1 is engine in use. Fig. 2 ready for road.

Fig. 2.

Send for Catalogue.

The Farquhar Separator
(Warranted)

Penna. Agricultural Works, York, Pa.
Lightest draft, most durable, simplest, most economic and perfect in use. Wastes no grain, cleans it ready for market.

AND HIGHEST PRIZE AWARDED SEPARATORS,
THE SILVER MEDAL AT Paris Exposition.
Send for Illustrated Catalogue. *Address A. B. Farquhar, York, Pa.*

$1000, REWARD

For any Washing Machine that will Wash Cleaner, Quicker, with Less Labor and Wear and Tear of Clothes than the

ROBBINS FAMILY WASHER AND BLEACHER,

THE ONLY PERFECT SELF-OPERATING WASHER IN THE WORLD.

No rubbing required. No more yellow clothes nor hard work on washing day. No more rubbing clothes full of holes. No more lame backs for farmers' wives washing harvest shirts. Seeing is believing, and if you will try it once, you will never again wash without it, nor use any other washing machine.

IT IS THE BEST IN THE WORLD, and will wash anything from a lace curtain to a horse blanket, and cannot get out of order.

Good Agents Wanted, both Male and Female, to whom Liberal Inducements are Offered.

AGENTS CAN MAKE FROM $10 TO $100 PER WEEK.

"A Splendid Washing Machine."

This is what they call the Robbins Family Washer at the home of the business manager of "Farm and Fireside." Heretofore it required one woman a whole day from early morn till late at night, to finish the washing, and an extra girl to cook. But since we got a Robbins Washer one girl attends to the washing, cooks dinner at the same time, and has all the clothing hung out to dry, and tubs, wringer, and everything put away before 12 o'clock noon. We wish we could tell our subscribers how delighted they are at our house with this simple washer, and also get them to understand that we write this simply and entirely for their benefit, and not at the solicitation of the manufacturers, nor with their knowledge or consent; but we write this to let our readers know that the Robbins Washer has actually proven to be an article that does all the manufacturers claim for it, and really does away with a great part of the drudgery required in washing clothes. We would pay many times the price asked rather than do without one. We have also noticed that it requires less soap than formerly, so that the saving in the soap will in a short time pay for the machine.—Springfield, O., Farm and Fireside, Oct. 1.

Publisher of Farmers' Review, Chicago, Ill., received a sample, and after giving it a trial, sends for $24 worth for his friends and neighbors.

The publishers of the New York Christian Advocate, after receiving sample washer, say: "It requires to be honestly tried a few times only to convince the housekeeper that she has found a friend and economizer of labor in the Washer. We have confidence in commending it to the attention of our lady readers."

The N. Y. Witness says: "Several of our staff have the machines in use, and are well satisfied with them."

N. Y. Weekly Sun says: "The Robbins Washer and Bleacher is as represented."

The Toledo Blade says: "We believe it to be one of the greatest inventions of the age."

The Chicago Inter-Ocean says: "The company could not well say less of that truly wonderful article, which is destined at no distant day to work a complete revolution in the method of accomplishing the family washing. We speak from our own knowledge, as well as from the testimony of thousands who have already availed themselves of its services."

E. B. Mack, N. Y. office of the Cincinnati Gazette says: "I have one in use in my house and it does admirable work."

D. F. Raymond, Cincinnati, O.—"Can I have Cincinnati and Hamilton County, Newport and Covington, Ky., by ordering $100 of Washers at once? Have waited to see what Washer would do; am delighted; does all you claim."

Again, December 9: "Inclosed please find draft for $100 on Met. National Bank. Please hurry along the Washers."

C. H. Mather, Burlington, N. Y.—After purchasing sample and "convincing the sceptical ones," orders $24, $75, $50, $24, $65, $24 worth in rapid succession.

W. P. Pratt, Frankfort, Me.—"I want the agency for your Washer and Bleacher. We have had one in our family for three years, and we think it an indispensable article. Several of our neighbors, I think, will buy."

J. H. Hill, of Campti, La., Jan. 23, 1880, writes: "My wife would not take fifty dollars for ours."

WE COULD FILL THE COLUMNS OF THIS PAPER WITH SUCH EVIDENCE. WILL PEOPLE BUY A HUMBUG THE SECOND TIME?

☞ See October number of *Agriculturist*, page 374, article on "Washing Machines and Washers."

The above is no boastful offer, made only for the sake of selling our Washer, but, on the contrary, we mean exactly what we say, and will really give $1,000 for any washing machine that can be proven better than ours before a competent committee. Any reader who doubts our ability to do all we agree, can easily be convinced by referring to the Mercantile National Bank of this city, to any express company in New York, or to the publishers of this paper.

SAMPLES PREPAID TO YOUR NEAREST RAILWAY EXPRESS OFFICE in any part of the United States east of the Mississippi and Missouri Rivers, also Kansas and Nebraska, for $3.50. West of that line as follows: In Dakota, at Bismarck, or Yankton, for $3.50; in Wyoming, at Cheyenne, for $3.50; in Idaho, at Franklin City, for $4.50; in Colorado, at Denver, or Pueblo, for $4; in New Mexico, at Sante Fe, for $5; in Arizona, at Prescott, for $8.50; in Utah, at Ogden, for $4; in Nevada, at Virginia City, for $5; in Louisiana, at New Orleans, for $3.50; in Arkansas, at Little Rock, for $3.50; in Texas, at Corsicana, for $4.50; at Texarcana, Denison, or Sherman, for $3.50. For the Pacific coast we will deliver No. 1 at San Francisco, Sacramento, Marysville, or San Jose, for $4. Our reason for so doing is to induce people to investigate this matter, feeling assured that a trial will secure an agent for us.

Send for a sample and secure A BUSINESS THAT WILL PAY YOU WELL. No article in the world has so much MONEY IN IT FOR AGENTS as this Washer.

When you order or write, mention this paper.

Address

Bissell Manufacturing Co.

50 BARCLAY STREET, N. Y.

CAUTION.

We hereby warn all persons against making, selling, or using any washer working on the principle of the ROBBINS FAMILY WASHER AND BLEACHER. Many imitations are now being offered for sale, even going so far as to use the descriptive portions of our circular and advertisements in order to mislead the public. We will prosecute all infringements to the full extent of the law.

THE

AMERICAN SUBMERGED PUMP

IS A DOUBLE-ACTING, NON-FREEZING

FORCE-PUMP.

Will draw water from 1 to 100 feet, with one-man power, and also force water to any required distance.

Prices, complete,

$15 to $75.

RUBBER HOSE,

For Garden Purposes, at manufacturer's prices.

Wakefield, Perfection, and Peerless

EARTH CLOSETS

Are the Best. Prices, $6.50 to $40.

Address

HENRY H. B. BLOOMFIELD,

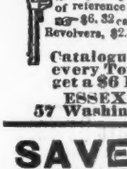
34 DEY STREET, N. Y.

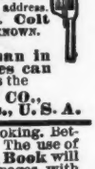
For Washing Windows, Carriages, etc. **Protects Buildings from Fire, and Trees, Vines, etc., from Insects, Potato Bugs and Canker Worms.** No Dwelling, Country Home, or Factory, should be without the Fountain Pump. Send for large Illustrated Circular.

J. A. WHITMAN,

Patentee & Manufacturer, **Providence, R. I.**

How to get a Revolver.





The largest and costliest Catalogue of Revolvers, &c., in the world, containing exact pictures of nearly every Revolver in existence; a valuable book of reference in itself. **Sent free** to any address.

☞ $6. 32 calibre Revolvers reduced to $2.75. **Colt** Revolvers, $2.50. BIGGEST BARGAINS EVER KNOWN.

Catalogue explains how one man in every Town in the United States can get a $6 Revolver free. Address the

ESSEX REPEATING ARMS CO.,

57 Washington St., Boston, Mass., U. S. A.

SAVE **YOUR MONEY** in Cooking. Better food at less cost. The use of our **Economical Cook Book** will save money daily in every household. 130 pages, with cover, and 1,000 Economic Recipes. Only 15 cts., postpaid. Large Ill. Catalogue of Books, Pictures, etc., free. J. L. PATTEN & CO., 47 Barclay St., New York.

LIQUID COTTAGE COLORS.

25 Shades ready for Brush.

The Best MIXED PAINTS in Market.

Also **Barn, Bridge, and Fence Paints.**

Send for circular.

CHICAGO WHITE LEAD & OIL CO.,

Cor. Green and Fulton Sts., Chicago, Ill.

E. W. BLATCHFORD Pres. C. F. GATES, Treas.

THIS NEW ELASTIC TRUSS

Has a Pad differing from all others, in cup-shape, with Self-Adjusting Ball in center, adapts itself to all positions of the body, while the BALL in the cup PRESSES BACK the INTESTINES JUST AS A PERSON WOULD WITH THE FINGER. With light pressure the Hernia is held securely day and night, and a radical cure certain. It is easy, durable and cheap. Sent by mail. Circulars free.

Eggleston Truss Co., Chicago, Ill.,

$10,000 INSURANCE FOR 35 Cts.

ON LIFE & PROPERTY.

$10,000 will be paid to any person who can *EXPLODE A LAMP* fitted with our **SAFETY ATTACHMENT.**

Mailed free for 35 cts. Four for $1.

Agents Wanted, Male or Female.

S. S. NEWTON'S SAFETY LAMP CO.,

BINGHAMTON, N. Y.

SALESROOM, 13 WEST BROADWAY, N. Y.

COPPER PATCH PLATE

For mending Tin, Brass, Copper, Lead, or Iron, without acid or soldering iron. Any lady or child can mend with it. Will send one sample Plate by mail (with directions) that will cut 192 ¾-in. square patches, on receipt of 25c.; 8 for $1; 100 for $10. (Postage stamps rec'd as cash.) AGENTS WANTED. Can carry one day's stock in your pocket. Sales will yield $3 to $15 per day. Our 64-page Illustrated CATALOGUE of Chromos, Jewelry, Novelties, Stationery, &c., FREE. Address CITY NOVELTY CO., 108 South 8th St., Philadelphia, Pa. Mention this paper.

$14 SHOT GUN! The Best Double-Barreled Shot-Gun in the world for the money. Warranted genuine twist, with *Rasp, Bell Box Wads, Box Caps and Wad Punch.* Also our celebrated Kentucky Rifle for *$12, warranted or no sale.* Send for Illustrated Catalogue and Price Lists to **James Bown & Son,** Enterprise Gun Works,

ESTABLISHED, 1848. *136 & 138 Wood St., Pittsburgh, Pa.*

L. E. RANSOM, 34 MAIDEN LANE, N. Y. CITY. **Perfect Butter Color** at lowest prices.

DELAWARE OHIO CHAIR.

The Delaware Double Caned Chairs are sold from Ocean to Ocean. If you want a Chair for the Library, Sitting Room, Lawn, or Office, that is strong, right in the seat, right in the back, right everywhere, ask for the genuine.

All not so branded are imitations.

DELAWARE CHAIR CO.,

Delaware, Ohio.

THE DELAWARE CHAIR TRADE MARK.

Observe the Trade Mark.

Send for Circular.

Everybody gets it for a Dollar. Subscription Easiest paper to canvass for in the world. If you want a specimen copy before subscribing, send for it. Tell all your neighbors about the great Dollar Weekly Agricultural Paper. It has no equal. Present circulation 50,000 copies.

No Club Rates. Agents wanted.

ORGAN BEATTY PIANO

NEW ORGANS 13 Stops, 3 set Golden Tongue Reeds, 2 Oct's. 2 Knee Swells, Walnut Case, warn'd 6 years, Stool & Book $68. New Pianos, Stool, Cover & Book, $143 to $255. Before you buy be sure to write me. Illustrated Newspaper sent Free. Address DANL. F. BEATTY, Washington, New Jersey.

MAGIC LANTERNS

and **Stereopticons** of all kinds and prices.—Views illustrating every subject, for **Public Exhibitions,** etc.—*Profitable business for a man with small capital.* Also, **Lanterns** and **Views** for *Colleges, Schools, Churches, Sunday Schools,* and *Parlor Entertainments.* Send stamp for 74-page Illustrated Catalogue.

McALLISTER, M'f'g Optician, 49 Nassau St., N. Y.

METROPOLITAN AGRICULTURAL WORKS.

Farm Implements and Fertilizers.

No. 1 Peruvian Guano: Standard. No. 1 Peruvian, Lobos brand.—**Russel Coe's Superphosphate of Lime, Complete Manures, Metropolitan Fertilizer, Pure Ground Bone.** Sold at lowest trade price, by the ton or cargo. Send for 1880 Pamphlet.

H. B. GRIFFING,
No. 70 Cortlandt Street, New York City.

Soluble Pacific Guano.

Having taken the General Selling Agency of above Guano, the value of which has already been demonstrated on crops of cotton, corn, tobacco, sugar-cane, wheat, roots, and garden vegetables—the Company's sales having exceeded the enormous aggregate of 40,000 *tons in a single season*—we now offer the same for sale with entire confidence as to its merits. No fertilizer ever introduced in this country has undergone severer tests, or come out of them with its character as a first-class, reliable fertilizer more thoroughly established. In consequence of the satisfactory results of these very complete tests, this Guano has acquired a reputation equal to that formerly enjoyed by Peruvian Guano. It is rich in **Bone Phosphate of Lime,** finely ground (a large proportion of which is immediately soluble), **Ammonia,** and **Potash,** besides other ingredients valuable as plant-food. Soluble Pacific Guano is manufactured at the Company's Works, Woods Holl, Mass., and Charleston, S. C., under the supervision of competent chemists, and none offered for sale is genuine unless having the Company's brand, and the names of John S. Reese & Co., Baltimore, or of the undersigned, branded on each sack. This Guano is offered for sale by our Agents throughout the United States. For further information address

GLIDDEN & CURTIS,
General Selling Agents,
BOSTON, MASS.

CHAPMAN & VAN WYCK,
(Established 1849),

DEALERS IN

PERUVIAN Guano

EXCLUSIVELY,
170 Front Street, New York.

MATFIELD FERTILIZER.

This is the only fertilizer containing all the soil elements found in each crop. Analysis will prove **that they contain a larger percentage of plant-food elements** than we claim for them by the labels placed on each package. Six years' experience has conclusively established the above fact. Send for circular. A few good agents wanted. Address

MATFIELD FERTILIZER CO.,
13 Doane St., Boston, Mass.

Peruvian Guano,

imported *direct* from *Peru* by the undersigned, is the

LEADING FERTILIZER

throughout the world, and includes a cheap grade for COTTON. It contains *all* the elements of **Plant-food** in the most

CONCENTRATED, BEST AND CHEAPEST

condition, and is adapted to any

SOIL, CROP, and CLIMATE.

Price Lists and descriptive Pamphlets as to its qualities: Brands under which it is sold, and brief directions for its use, will be sent gratis on application to

HOBSON, HURTADO & CO.,
Agents for the Consignees of the Government of Peru,
No. 63 Pine St., New York.

N. B.—The Bags of all grades bear the firm name of **HOBSON, HURTADO & CO.**

What Farmers Want.

They want Pure Ground Bone! Why—because it contains those elements taken from the soil in the grain and carried away, thus impoverishing the land. Pure Premium Bone, made of dry, hard, unsteamed bones, supplies just this waste, as every farmer can learn by practical experience at a trifling cost. Send for a full explanation of how it works.

Excelsior Fertilizer Co.,
Salem, Ohio.

The New "BOSS" Cultivator

For General Purpose Work. Sold only from Manufactory. Address WM. PERRY & SON, Bridgeport, Conn., or Canandaigua, N. Y., for Illustrated Circular. Our Catalogue of many very Valuable New Apples, Pears, Peaches, Quinces, Grapes, and Strawberries, Now Ready. Send for it and form a Club. **Discount Liberal.**

Stockbridge Manures.

ANIMAL MEAL.

Bowker's Phosphates.

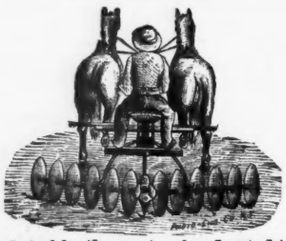
LAWN DRESSING.

NEW PAMPHLETS AND CIRCULARS JUST OUT—MAILED FREE. Address

BOWKER FERTILIZER CO.,
43 Chatham St., Boston, Mass.
3 Park Place, New York.
81 Exchange St., Rochester, N. Y.

La Dows Jointed Pulverizing & Smoothing DISC HARROW.

Light, Simple, Durable & Flexible.

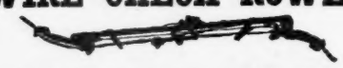


Being jointed in the center, is adapted to both smooth and uneven surfaces. Acknowledged the best of the kind, and will pulverize and cover seed better in one operation, than going over twice with others. Made with both Chilled Metal and Cast Steel Discs polished. Send for circular and price list. Manufactured by

WHEELER & MELICK CO.,
Albany, N. Y., for the United States.

By EVERETT & SMALL, Boston, Mass., for the N. E. States, and by Badlong & Co., Aurora, Ill., for Ill., Iowa, Wis., Minn., Neb., Kan., and Mo.

HAWORTH'S WIRE CHECK ROWER.



Acknowledged by all farmers to be THE BEST AND ONLY PERFECTLY SUCCESSFUL Wire Check Rower. Will plant FIVE ACRES more a day than any other, as the Wire is not removed from the machine in planting the entire field. Eleven years' use has demonstrated the fact that the only successful way to use a rope or wire line is for the machine to transfer it into position to plant the next row. Do not buy a Wire Check Rower unless the line crosses the machine, as it will last twice as long as a wire run on one side, which must be dragged into position regardless of obstructions met as the planter crosses the field, and which causes friction, inaccurate checking, and breaking of the wire. In our Check Rower the elasticity of the wire and its large curve in passing over the machine, prevents a particle of bending or displacement in the wire, such as occurs in Check Rowers where the line is dragged into the pulley at an angle and high tension, and both bent and displaced as it enters the pulley. Dragging the line into position also causes canting, or lopping, of the planter, by which one row is planted too deep and the other too shallow. Our ROPE CHECK ROWERS are too well and favorably known to call for any extended notice. For full description of our WIRE CHECK ROWER and the three styles of ROPE CHECK ROWERS which we manufacture, write for a circular.

HAWORTH & SONS, Decatur, Ill.

Improved Baldwin's American Fodder Cutter

The Simplest and Best! Only three Feed Gears! Cuts all kinds of feed, hay, straw, and corn-stalks with ease and rapidity. Power cutters fitted with our **Improved Safety Fly Wheel,** which secures perfect safety to the operator and machine. See large advertisement in Oct. No. of *Agriculturist.* Send for illustrated circular. C. PIERPONT & CO.,
Manufacturers, New Haven, Ct.

WELL-BORING,

ARTESIAN WELL DRILLING & MINERAL PROSPECTING MACHINERY,

and how to use, is fully illustrated, explained and highly recommended by the "**American Agriculturist**" in the November Number 1879, Page 465. Send for it. Portable, low priced, worked by man, horse or steam power. Needed by farmers in every county. Good business for Winter or Summer and very profitable. Can get good wells in earth or rock anywhere. We want the names of men that need wells. Send for illustrated price-list and terms to Agents. Address,

Pierce Well Excavator Co., 29 Rose Street, New York, U. S. A.

Bookwalter Engine.

Compact, Substantial, Economical, and Easily managed. Guaranteed to work well and give full power claimed. Engine and Boiler complete, including Governor, Pump, &c., (and boxing), at the low price of

3	Horse-Power...	$240.00
4½	" " ...	280.00
6½	" " ...	370.00

Put on Cars at Springfield, Ohio.

JAMES LEFFEL & CO.,
Springfield, Ohio,
or 109 Liberty St., New York City.

What Every Farmer Should Have.

One of McConaughey's Reliable Hand Corn Planters for planting and replanting in the most practical manner in all kinds of soil. Every machine warranted. Price only $3. Agents wanted

THOS. B. CONAUGHEY, Newark, Delaware.

AGRICULTURAL IMPLEMENTS of Every Kind for Spring.

R. H. ALLEN & CO. NEW YORK A TRADE MARK U.S.A.

FERTILIZERS of the Best Guaranteed Qualities.

Send for Special Circular of anything needed in these articles.

R. H. ALLEN & CO.,
P. O. Box 376, 189 & 191 Water St.,
NEW YORK CITY.

"ACME"

PULVERIZING HARROW, CLOD CRUSHER & LEVELER.

Has twelve **STEEL** Coulter Teeth and ten STEEL Cutting Spurs. Cuts over six feet wide and two to four inches deep. The only implement combining Pulverizer, Crusher, and Leveler; performs all three operations at one time in the most perfect manner. Works perfectly on light soil, but is *especially adapted to sod and hard clay where other Harrows utterly fail.* Agents wanted. Send for circular.

NASH & BRO.,
Harrisburg, Pa., and 23 College Place, New York.

PEARCE'S IMPROVED Cahoon Broadcast Seed Sower.

For Sowing all kinds of Grain and Grass Seed.

Does as much work as 5 men can do by hand, and BETTER work than can be done by any other means whatever. Agents wanted in every county in the United States. Price $6. Send stamp for circular.

GOODELL COMPANY,
Antrim, N. H.,
SOLE MANUFACTURERS.

Delaware Wrought Iron Plow Sulky.

Same Sulky answers for Plowing, Cultivating, and Harrowing. Can use with same any good Implements. Send for Circulars.

DELAWARE FENCE & MACHINE CO.,
Sole Manufacturers, Delaware, Ohio, 1880.

FARM GRIST MILLS AND CORN SHELLERS.

Over 25,000 Now in Use.

Every Machine is guaranteed to give satisfaction, or no pay. Price of Mills, $12; Shellers, $3. Every farmer should have them. Send for illustrated circulars and terms to agents. Address

LIVINGSTON & CO., Pittsburgh, Pa.

CORN AND COB MILLS.

WARRANTED

Superior to any in use for all purposes.

CORN SHELLERS
all sizes.
FEED CUTTERS, Etc.

Satisfaction guaranteed. Send for Circulars and prices.

Manufactured by
WHITMAN AGRICULT'L CO.,
ST. LOUIS, MO.

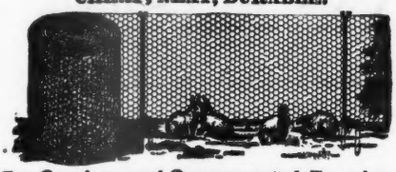
Patent Concave Ox-Shoes.

The only forged ox-shoe made with *concavity* to fit hoof, and the best and cheapest.

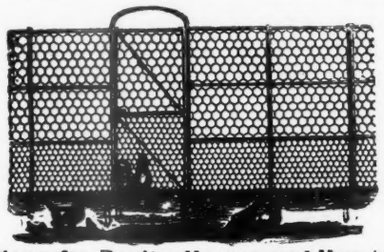
GREENFIELD TOOL CO., Greenfield, Mass.

Galvanized Wire Nettings

CHEAP, NEAT, DURABLE.



For Garden and Ornamental Fencing, Poultry Runs, Fishing Ponds, Aviaries, Pigeon Houses,
AND
Trainer for Grape and Floral Vines.



Plans for Poultry Houses and How to arrange Runs, *furnished on application.*

Orders or letters of inquiry will receive prompt attention. Write for Prices. Address **BROCKNER & EVANS,** Manufacturers of Patent Steel-Wire Hay Bands, and Importers of Galvanized Wire Nettings, Wire Goods, etc.,
Mention paper. **423 West St., N. Y. City.**

BROWN LEGHORNS **A SPECIALTY.** Pure as can be had in the country. Eggs $1.50 for 13. Pure-bred Birds, $5 per Trio.
GEO. SCOTT, Springfield, N. J.

EGGS FOR HATCHING from P. Cochins, Plymouth Rocks, Houdans, Golden Penciled Hamburgs, W. and Brown Leghorns, Black-breasted Red Games, and Pekin Ducks, at $3.00 for 26 eggs. Also White Prolific Seed Corn, at $2.00 per bu. A. S. BEEKMAN, South Branch, N. J.

EGGS FOR HATCHING. 5 Varieties Fancy Poultry. Prices reasonable.
CHAS. FELDMAN, Martinsburg, W. Va.

NEW JERSEY CENTRAL STOCK FARM AND POULTRY YARDS, Somerville, N. J., H. C. Van Derveer & Son, Proprietors. H. R. Jersey Cattle, Poland-China, Jersey-Red, Berkshire and Yorkshire Swine; Cotswold and Southdown Sheep; Bronze, Naragansetts and White Holland Turkeys; Bremen and Toulouse Geese. All the leading varieties of land and water fowls.

EGGS For Hatching.—W. F. B. Spanish and B. B. R. Games. Finest strains in America. Send stamp for circular. Louis Anderson, Flemington, N. J.

New England Stock and Poultry Farm.

Plymouth Rocks and White African Bantams, Rathbun's Strain P. Rocks acknowledged the best layers in the world. My 42 breeding hens, during the past year, produced 10,500 eggs, and nine years' experience in this popular meritorious fowl gives me a fair estimation that they are unsurpassed for all purposes. Eggs for hatching from both breeds, $1.50 per 13. $2.00 per 26, $3.00 per 40, $4.00 per 52, $5.00 per 75 and $6.00 per 100, all carefully packed and warranted fresh. Remit money through P. O. order or registered letter. J. H. RATHBUN, P. O. Box, 738.
Hartford, Conn.

GAME FOWL BRED & SHIPPED. Also Sporting Dogs and Cattle, by J. C. COOPER, Cooper Hill, Limerick, Ireland.

EGGS FOR HATCHING!

Light Brahmas and **Plymouth Rocks, $1.50** for **13,** or **$2** for **two dozen,** carefully packed at express. **Extra fine stock.** Care and expense not spared to get the **best** strains. ☞ A few **Cockerels** of each to spare.
F. C. BIDDLE, Chadd's Ford, Pa.

POULTRY, PHEASANTS, PIGS, PIGEONS,

Furnished on short notice and at reasonable prices. A specialty of Broken Bone, Oyster Shell, ground Beef Scraps, and Poultry and Animal Medicines. Try our Stone Water Fountains; best fountain in use. Eggs for hatching in their season. Send for price list. J. C. LONG, Jr., & CO., Fanciers' Agency, 62 Courtlandt St., New York.

Cotton Seed Meal.

Shipments made to all sections of the country. Send address for circulars and Price-Lists. State quantity desired. The trade supplied by the car-load at the lowest market rates. Address
HOLLISTER & CO., or C. BALLOCH,
Mention this paper. **90 Broad St., New York.**

A book devoted entirely to PLYMOUTH ROCK fowls, also a separate book on each of the following breeds: LIGHT BRAHMAS, WHITE LEGHORNS, and BROWN LEGHORNS, and a book on curing POULTRY DISEASES. Either of the above mailed for 25 cts., or all five for $1.00. Address the author
H. H. STODDARD, Hartford, Ct.

ANNOUNCEMENT EXTRAORDINARY.

IMPERIAL EGG FOOD

PLACED AT YOUR DOOR

Free of Transportation.

In order to reach parties who could not otherwise be induced to test the merits of our preparation, and believing that all who make a THOROUGH trial will not be without it again under any circumstances, we propose, during and only through the next three months, to deliver to any railway station East of the Mississippi River

IMPERIAL EGG FOOD,

In 25 lb. kegs for $6.25; West of there, and as far as Colorado, for $7.50. We cannot collect on delivery.
We shall, as heretofore, mail packages for 50 cents and $1.00; six lb. boxes, $2.00, purchaser paying express.
WHOLESALE AGENTS—B. K. Bliss & Sons, and J. C. Long, Jr., & Co., New York; Benson, Maule & Co., Philadelphia; H. B. Arnold & Co., Boston; C. Swain, San Francisco, Cal.
CHARLES R. ALLEN & CO., 216 State Street, Hartford, Conn.

A Cure for Foot Rot.

Best & Cheapest.

Buchan's Cresylic Sheep Dip prevents and cures the scab and all parasitic diseases of the skin.

Buchan's Cresylic Ointment is CERTAIN DEATH to the Screw-worm or Grub.

For further particulars, send for price lists and circulars to
KIDDER & LAIRD, 83 John St., New York.

NOVELTY INCUBATOR.

I offer this as the **simplest, cheapest, most easily run,** and **best** Incubator. The cost of running is 3 cts. for fuel and a few minutes attention. Hatches 80 to 90 per cent almost surely. **100 Eggs, $25.00.**
Also **NOVELTY HYDRO-MOTHER, $8.**
A. G. ATKINS, Orange, N. J.

The CENTENNIAL IRON CLAD

INCUBATOR.

Simple, Compact, Durable, Easily Understood, Elegantly Finished; requires attention only twice daily, and will hatch 80 to 90 per cent of the eggs. It is a *Perfectly Self-regulating Machine,* and is endorsed by the best breeders in America. Also BROODERS for 20, 50, 80, and 300 Chickens. The most complete and perfect article in the market. Send 3-cent stamp for Illustrated Circular.
A. M. HALSTED, Rye, N. Y.

MONEY IN POULTRY. 45 Medals and diplomas have been awarded to Prof. A. Corbett, No. 7 Warren St., N. Y., for his new process for hatching and raising poultry in horse manure. Particulars free.

POULTRY WORLD.

A monthly magazine, the oldest, largest, and best periodical devoted entirely to poultry ever published. Splendidly illustrated. $1.25 per year. Also the *American Poultry Yard,* the only weekly paper devoted entirely to poultry in existence. $1.50 per year. Both papers for $2.00. A sample copy of both mailed on receipt of nine cents in postage stamps.
Address H. H. STODDARD, HARTFORD, CT.

EGGS from thoroughbred **Light Brahmas,** carefully packed for hatching, **$3.00** per **13.** 1st premium birds in breeding yards. For illustration see *Agriculturist* for March, 1878. Address
DR. MAYER, Willow Street P. O., Lancaster Co., Pa.

THE D. M. MAGIE CO., Oxford, Butler Co., Ohio,
Originator, and Breeders of our World Famous Magie or Poland China Swine, are receiving orders now for next spring's pigs. Money need not accompany your order. Boars fit for service, and Sows bred for sale now. Send for Descriptive and Price List circulars.

RED FOX, SKUNK, MUSKRAT, &c., &c.—Highest cash prices paid. Send for circular.
E. C. BOUGHTON, 5 Howard St., N. Y.

Grind your bone meal, crush your own oyster shells in the $4.00 Hand Mill; will crush a peck in 13 min. Testimonials furnished. Manufactured by **Frank Wilson,** 52 Delaware St., Easton, Pa.

CIDER

Presses, Graters, Elevators, &c.

BOOMER & BOSCHERT PRESS CO.
Syracuse, N. Y.

THOROUGH-BRED JERSEYS.

25 thorough-bred Jersey heifers and cows, all entitled to registry in the Am. J. C. Club Register; 3 months to 8 years old. Prices range from $75 to $500. 25 best family, grade Jersey cows, ¾, ⅞, 15-16; 2 to 8 years old; bred expressly for their butter qualities. Prices range from $85 to $200. All in calf by thorough-bred Jersey Bull. All animals sold by me guaranteed as represented.
THOMAS FITCH, New London, Conn.

University of the State of New York.

American Veterinary College.

141 West 54th St. NEW YORK CITY.

The regular course of lectures commences in October, each year. Circular and information can be had on application to
A. LIAUTARD, M.D.V.S.,
Dean of the Faculty.

RIVERSIDE FARM.—Jerseys, Berkshires, and Cotswolds imported, bred, and for sale. Bronze Turkeys, Pekin Ducks, and Light Brahmas. Send for catalogue.
C. P. MATTOCKS, Portland, Me.

View of a heel calk from a Steel Center, Self-Sharpening Shoe, after being worn all winter.

PATENT STEEL CENTER, SELF-SHARPENING HORSE AND MULE SHOES.

A sample set will be sent to any address, except in the States of Minnesota and Wisconsin, on receipt of one dollar. Prices by keg on application.

THE ADVANTAGE

of the Steel Center Self-Sharpening Shoe is that the calks are **always sharp.** A thin plate of steel is rolled inside of the soft iron bar from which the shoe is made. The soft iron in the calk partially wears away, leaving the sharp steel center, as shown in the cut. Address
SHOENBERGER & CO., Pittsburgh, Pa. Agents for the United States except the States of Minnesota and Wisconsin.

The Bryden Concaved Steel Calk Horse Shoe. The most complete shoe made, with welded steel toe calk, and iron heel calks, hammered, not rolled, and equal in wear to hand-made work. This Shoe is easily fitted, hot or cold, has a perfectly level foot bearing, is light and durable, with a low crease to protect the nails from working loose. The cheapest and best Shoe for Horse Railroads, Carriage and Farm Horses, now made. Made in sizes 1 to 5, hind and forward. Send for circulars. THE BRYDEN HORSE SHOE CO., 52 Broadway, N. Y.

"THE JOHN D. BILLINGS Patent Steel and Iron Horse-Shoe."

Made *complete,* with Level Spring Platform—Continuous Calk. The best for Horse-Railroads, Farm, and Carriage Horses in the world. Cures Tender and Contracted Feet, Corns, Interfering, Quarter-crack Lameness, and all evils resulting from the use of the common shoe. Trial Set, with Nails, $1.00. To measure, place foot on paper, and draw pencil around. Shoes put on cold. No heating of foot. Send for free Illustrated Pamphlet, THE JOHN D. BILLINGS PATENT HORSE-SHOE COMPANY, 161 and 163 Bank Street, New York.

AYRSHIRE BULL CALVES from two to nine months old, with perfect pedigrees, for sale at low prices.
I. ANDREW CASTRELINE, Dover, N. J.

2,806 Weight of two **Ohio Improved Chester Hogs.** Send for description of this famous breed, and Fowls. L. B. SILVER, Cleveland, O.

ESSEX PIGS. Catalogue and price list free to all.
JOSEPH HARRIS.
Moreton Farm, Rochester, N. Y.

HIGH CLASS POULTRY, Grape Vines, and Small Fruits. Finer than ever. Send for Circular.
GEO. S. JOSSELYN, Fredonia, N. Y.

Gregg, Queen of Market, and **Cuthbert** Raspberry Plants, $3 per 100. E. Prolific and Reliance, $2 per 100. For prices 12 other sorts, see Catalogue.
J. S. COLLINS, Moorestown, N. J.

Maynard's Rifles and Shot-Guns.

Our New Off-Hand Rifle.

For hunting and target practice, at all ranges, the "MAYNARD" more completely supplies the wants of hunters and sportsmen generally, than any other rifle in the world, as many barrels can be used on one stock; and for ACCURACY, CONVENIENCE, DURABILITY, and SAFETY, is not excelled. The following are some of the scores recently made at Walnut Hill, by members of the Massachusetts Rifle Association: J. N. Frye, President, in All-Comers' Match, 15 shots, 200 yards, without cleaning, 5454555555445—71; L. L. Hubbard, Executive Officer, 200 yards, off-hand, 4555555555—49; O. M. Jewell, 300 yards, off-hand, 5455555—34; O. M. Jewell, 200 yards, off-hand, 5555555—35. For illustrated price list, address

MASSACHUSETTS ARMS COMPANY, Chicopee Falls, Mass.

We Always Pay Postage.

The Famous Toledo Blade

of old was a weapon of murder; MAHER & GROSH have the new Toledo Blade in a pocket knife, and are sending them all over the broad land. All our goods are hand-forged from razor steel, and will be exchanged **free**, if soft or flawy. Cut shows Knife No. 30, two blade, price 75c., with white handle, $1. Same in three blade, ebony $1. BOYS' KNIVES, 25c.; MEN'S, 1 blade, medium, 35c.; heavy, 50c.; 2 blade, medium, 50c.; heavy, 60c.; extra heavy, *best knife in market for rough work*, 75c.; our heavy, fine finished, $1; medium, 2 blade, fine finish, 75c. PRUNERS, medium, 75c.; OUR BEST, very strong, oil temper, and tested, $1.

CIRCULARS FREE. **DISCOUNT TO DEALERS.**

Address MAHER & GROSH, Cutlers, Toledo, O.

POTATO BUG. COTTON WORM. CANKER WORM.

THE BEST INSECTICIDE EVER USED. **London Purple.** (Trade Mark.)

Sold by all Wholesale Druggists and Stores throughout the United States. If not obtainable of nearest dealer, send direct to sole manufacturers, **HEMINGWAY'S LONDON PURPLE COMPANY (Limited),**
60 Mark Lane, London, England. **90 Water Street, N. Y. P. O. address, Box 990.**

A. R. WHITNEY, Franklin Grove Orchard and Nurseries, Lee Co., Ill., writes: "We have bid the Canker Worm a long farewell, and have done it with your LONDON PURPLE. We put in about three-fourths to one pound of LONDON PURPLE to 44 gallons of water, and applied with a force pump. It is better than Paris Green, as the particles of LONDON PURPLE adhere to the leaves and Paris Green does not."

AGENTS WANTED to Sell the NEW BOOK

FARMING FOR PROFIT

TELLS HOW TO

Cultivate all the Farm Crops in the Best Manner; Breed, Feed and Care for Stock; Grow Fruit; Manage Farm Business; Make Happy Homes, and

How to Make Money on the Farm.

Every Farmer should have a copy. **860 Pages. 140 Illustrations.** Send for circulars to

J. C. McCURDY & CO., Philadelphia, Pa.

AGENTS WANTED for the richly illustrated and only complete and authentic history of the great tour of

GRANT AROUND THE WORLD

It describes Royal Palaces, Rare Curiosities, Wealth and Wonders of the Indies, China, Japan, etc. A million people want it. This is the best chance of your life to make money. Beware of "catch-penny" imitations. Send for circulars and extra terms to Agents. Address,

National Publishing Co., Philadelphia, Pa.

☞ **FRIENDS!** If you are in any way interested in

BEES OR HONEY,

We will with pleasure send you a sample copy of our **MONTHLY GLEANINGS IN BEE CULTURE,** with a descriptive price-list of the latest improvements in **Hives, Honey Extractors, Artificial Comb, Section Honey Boxes,** all books and journals, and everything pertaining to Bee Culture. *Nothing Patented.* Simply send your address on a postal card, *written plainly*, to

A. I. ROOT, Medina, Ohio.

50 Elegant Cards. New Chromo, Shells, Gilt-Edge, etc., with name, 10 cents. G. A. SPRING, East Wallingford, Ct.

50 CHROMO, SNOWFLAKE, AND LACE CARDS, with name, 10c. 40 all chromos, 10c. STAR PRINTING CO., Northford, Ct.

18 **ELEGANT** New Style Chromo Cards, with name, 10 cents, post-paid. **GEO. I. REED & CO., Nassau, N. Y.**

62 Gold, Crystal, Lace, Perfumed, and Chromo Cards, name in Gold and Jet, 10c. CLINTON BROS., Clintonville, Ct.

24 **CHROMOS** with Name, 8 Gold, 8 Silver, 8 Tinted, and 8 Designs of each, 18 cts.; in Case, 20 cts. NOVELTY CARD CO., Wallingford, Conn.

EMPLOYMENT—LOCAL OR Traveling State which preferred. Also SALARY per month. All EXPENSES advanced. WAGES promptly paid. SLOAN & Co. 306 George St. Cincinnati, O.

AGENTS WANTED For the handsomest and

CHEAPEST BIBLES Ever furnished Agents. Extra Terms and Large **CASH PREMIUMS**

FORSHEE & McMAKIN, Cincinnati, O.

THE SORGO HAND BOOK

A Treatise on Sorgo and Imphee Canes, and the Minnesota Early Amber Sugar Cane. The **EDITION FOR 1880** is now ready, and will be sent free on application. We can furnish **PURE CANE SEED** of the best variety.

BLYMYER MANUFACTURING CO., Cincinnati, O.

Sugar Cane Machinery, Steam Engines, Circular Saw Mills, Portable Grain Mills, Church and School Bells, &c.

Are You Going to New York? Then Stop at the

HYGIENIC & TURKISH BATH HOTEL,

13 & 15 Laight St., New York.

This well-known house is convenient of access from all parts of the city. The table is supplied with the best kinds of food, healthfully prepared. The house is noted for its pleasant parlors, and the cheerful, home-like feeling that prevails. It has just been refitted, and the prices are moderate. Connected with the house are Turkish Baths, etc., etc. Send for circular. M. L. HOLBROOK, Proprietor.

Scribner's Lumber & Log-Book.

OVER HALF A MILLION SOLD. Most complete book of its kind ever published. Gives measurement of all kinds of lumber, logs, and plank, by Doyles' Rule, cubical contents of square and round timber, staves and heading bolt tables, wages, rent, board, capacity of cisterns, cord-wood tables, interest, etc. Standard Book throughout United States and Canada.

Ask your bookseller for it, or one sent by me for 35 cents, post-paid.

G. W. FISHER, P. O. Box 238, Rochester, N. Y.

EXCELSIOR CHURN POWER.

The Best Dog Power now in Use.

For further particulars inquire of A. McCREADY & BRO., New Galilee, Beaver Co., Pa.

SPAIN'S

PATENT CHURNS.

Centennial Medal Awarded.

In use over 25 years.

Removable Dasher.

Made of White Cedar with galvanized hoops.

Send for circular and prices.

CLEMENT & DUNBAR, Philadelphia, Pa.

USE THE VERY BEST.

"Trade R Mark."

ANNATTO.

L. E. RANSOM, 34 Maiden Lane, N. Y. City.

Kieffer Pear, Le Conte Pear, Champion **Quince, Japanese Persimmon** Trees. J. S. COLLINS, Moorestown, N. J.

THE NEW BLANCHARD CHURN THE NEW

We have perfected a *radical* and *valuable* improvement in our celebrated Churn, which needs but to be seen to be appreciated. Now offered for the first time to the dairy public.

It received the HIGHEST PREMIUM at the International Dairy Fair in New York City, in competition with all the leading churns in the market.

Nine sizes made, churning from one to one hundred gallons. Warranted to be exactly as represented.

Send to any dealer in REALLY first-class Farm and Dairy Implements for a Descriptive Circular of "THE NEW BLANCHARD CHURN," or to the Sole Manufacturers, PORTER BLANCHARD'S SONS, CONCORD, N. H.

Cooley Creamer

Awarded Gold Medal at Paris Agricultural Exhibition, 1879.

Butter made by this process awarded Sweepstakes at International Dairy at New York, 1878. Two Gold Medals and First Premium on Dairy Butter at same Fair, 1879.

It requires no milk room.

It raises all of cream between milking.

It affords best ventilation to milk.

It is more thoroughly made.

It is cheaper. It requires less labor, and gives better satisfaction than any other way of setting milk.

Send for "Dairyman," giving full particulars and testimonials.

VT. FARM MACHINE CO., Bellows Falls, Vt.

DAIRY SUPPLY CO.

261 and 263 Greenwich St., New York.

Offers **complete outfits** for large and small **Butter Dairies,** of the newest and of the best apparatus and appliances.

The most approved and simplest apparatus for securing, cooling, and delivering **pure milk** and **cream** a specialty.

Ice Chests, Refrigerators, and Cold-Rooms, estimated on and constructed to order.

Glass Bottles and Jars for individual milk delivery.

Butter Packages for square or round prints with molds to match.

Air-tight Butter Packages for holding two to ten pounds in crates of 48 to 60 lbs.

Milk-Setting Appliances.—Cooler pails, do. ventilated, with and without windows to inspect depth of cream. **Creamers, "Bureau" and "Cabinet"** Creameries in variety, etc.

The Perfect Milk Pail. The Pendulum Churn.

Our specialties, and the best of their kind in the world. Address as above.

REID'S

Creamery.

The simplest, best, and most convenient yet invented.

AGENTS WANTED.

Send for circular to

A. H. REID, 6 N. Eighteenth St., Philadelphia, Pa.

LILLY'S PATENT

BUTTER-WORKER

Received the **First Premium** from the Pennsylvania State Agricultural Society last September, and is acknowledged to be the only self-feeding and reliable Machine in the market. Send for circular, giving the names of the Ladies and Gentlemen who acted as Judges at the late State Fair.

C. H. R. TRIEBELS, 316 Race St., Phila., Pa.

BUTTERWORKER.

The most effective, simple and convenient yet invented. **Works 30 lbs.** *in less than* **5 minutes,** *thoroughly working out buttermilk* and *mixing in the salt.* **AGENTS WANTED.** *Send for Circular.*

A. H. REID, 6 N. Eighteenth St., Philadelphia, Pa.

SOLD AT GOLD PRICES!

The Original Improved **UNION CHURN.**

Introduced 14 years ago, and the acknowledged standard churn of the country. Easily operated and easily cleaned, making beautiful butter by the extra working of the dasher on the butter while churning. Our Union Churn has been awarded the first prize over all competitors at twelve different State Fairs. Every Churn warranted. Address TIFFIN UNION CHURN CO., Tiffin, Ohio.

Why Go West?

When good land, unequalled healthy climate, every luxury of Land and Sea, and the advantages of refined Society, first-class Schools, Churches, Railroads, Telegraphs, and Daily Mails, are within 12 hours of Boston and less from the other great Market Cities of the Atlantic Coast. Can be had at prices that warrant success, and on accommodating terms.

The Great Garden Farm Lands of the Atlantic Coast, with Soil unsurpassed, Pure Soft Water, Mild Winters, **Favorable Seasons**, Producing Grains, Fruits, Vines, and Flowers, and the Waters abounding with the most delicious Fish, Oysters, Clams, and Terrapin. Special advantages offered Colonies and new Settlers.

For Illustrated Book enclose 3c. stamp to

J. T. BUDD, Land Agent,

P., W. & B. R. R. Depot. Wilmington, Del.

RELIEF FOR HARD TIMES!!

A Sure Investment!!

BUY LAND OF

THE UNION PACIFIC RAILROAD COMPANY,

This Company has **3,000,000** acres of the **Best in the world**; for sale in **NEBRASKA**, at **Prices** and on **Terms** that make it **cheaper** to **own a farm** than be without. **Short Winters! Long Summers! Come and see. Cheap fare from all principal points.**

Write for information. **Sent Free** everywhere.

LEAVITT BURNHAM,

Land Commissioner U. P. R. R. Co.,

Cor. 9th and Farnam Sts., **Omaha, Neb.**

☞ Refer to this advertisement.

1,000,000 ACRES CHOICE LANDS IN
MINNESOTA & DAKOTA.
MINNESOTA
WISCONSIN
DAKOTA
FOR SALE AT $2.50 TO $6.00 PER ACRE ON
EASY TERMS. FREE FARE & LOW FREIGHT
TO PURCHASERS. FOR GUIDE CONTAINING
MAP & FULL INFORMATION, ADDRESS
CHAS. E. SIMMONS,
LAND COM'R C. & N.W. RY CHICAGO, ILL.

THE KANSAS LAND & IMMIGRATION CO. offers the biggest thing in America in Lands and Farms and Cheap Tickets. Sectional Map, etc., free.

M. O'DOWD, Sec., 77 & 79 Clark St., Chicago, Ill.

A BARGAIN

Can be had in a splendid Island on the Atlantic Coast, peculiarly adapted to raising Sheep and Cattle. It contains 2,800 Acres and is offered very low for Cash.

Address **J. T. BUDD, Land Agent, Wilmington, Del.**

FARMS! Fruit, Grain, and Grass Farms in best part of Maryland at *Panic Prices*. For Catalogues address H. S. MANCHA, Ridgely, Md.

---

250 MARYLAND FARMS, in Tracts from 30 to 300 acres.

Near railroad and navigable Salt-water (with all its luxuries), in Talbot Co., Md. Climate mild and healthy. Titles good. New Pamphlet and Map showing *location*, free.

Address C. K. SHANAHAN, Atty., Easton, Md.

MARYLAND IMPROVED FARMS, $7 to $35 per acre. Catalogues sent free.

H. P. CHAMBERS, Federalsburg, Maryland.

LANDS AND HOMES

IN SOUTHWEST MISSOURI.

1,000,000 acres well watered Timber and Prairie Lands along the line of the St. Louis and San Francisco R. R. for sale at from **$2.50** to **$8.00** per acre on seven years time. Excellent for Stock, Fruit, and Farming. The best Tobacco region in the West. Short winters, convenient markets, superior schools, low taxes, healthful climate, good society. Free transportation from St. Louis to purchasers of land. Send for Maps and Circulars.

W. H. COFFIN, Land Commissioner, Temple Building, St. Louis, Mo.

---

300 FARMS in the best part of Maryland at panic prices. For Catalogue, address H. S. MANCHA, Ridgely, Maryland.

CALIFORNIA LANDS,

large or small tracts; homes or investments for sale by McAFEE BROTHERS, 202 Sansome St., San Francisco, Cal.

IOWA

Over **1,000,000 Acres** of Choice Farming Lands in the **Near West.**

For Sale by the

Iowa R.R. Land Co. **FARMS**

Cedar Rapids, Iowa.

Branch Office, 92 Randolph St., Chicago, Ill.

FARMS. 100 Delaware Fruit and Grain Farms cheap. Catalogues free. A. P. GRIFFITH, Smyrna, Del.

C. GILBERT'S STARCH

Penn Mutual

LIFE INSURANCE COMPANY

OF PHILADELPHIA.

Purely Mutual. ASSETS $7,031,318.84

SAMUEL C. HUEY, Pres't.

Dividends annually. Insurance at net cost. Rates and 32d Annual Statement furnished. Agents wanted.

Apply to **H. S. STEPHENS, V. P.**

RIDGE'S FOOD for INFANTS AND INVALIDS

Do not let your children grow up weak and puny, when Ridge's Food can be had at such a small cost. WOOLRICH & CO., on every label.

Building Felt.

This water-proof material, resembling fine leather, is for outside **work** (*no tar substances used*) and **inside**, instead of plaster. Felt **carpetings**, etc. Send for circular and samples.

C. J. FAY, Camden, N. J.

AWARDED HIGHEST PRIZE AND ONLY

MEDAL

PARIS EXPOSITION, 1878.

A GREAT SUCCESS! 40,000 sold!! HEADLEY'S wonderfully *popular* work, the

LIFE AND TRAVELS of GEN. GRANT

is pronounced by the General's intimate friends the best low-priced work—hence the splendid success of Agents. ☞ A MILLION people want HEADLEY'S book to-day. We need 3000 MORE AGENTS AT ONCE!! BEWARE of imitations. We send *proof* of superiority, *sample* leaves, *steel portrait* of Grant, and *full* particulars **free** to all desiring them. Address HUBBARD BROS., Publishers, 723 Chestnut Street, Philadelphia, Pa., or 36 La Salle Street, Chicago, Ill.

GEMS OF POETRY: being Choice Selections from the Poets, for use in Albums, Valentines, Letter-writing, etc. 64 pages, with cover. Full of wit, wisdom, and tender sentiment. Sent, postpaid, for only 15 cts. Our Ill. Catalogue of books, pictures, etc., **free.**

J. L. PATTEN & CO., 47 Barclay St., New York.

DIARY FREE for 1880, with postal information, improved interest-table, calendar, &c., &c., will be mailed on receipt of two 3 cent stamps, to any address, by writing to C. E. HIRES, wholesale Botanic Druggist, 215 Market St., Philadelphia, Pa.

E. & O. WARD, PRODUCE COMMISSION MERCHANTS.

(ESTABLISHED 1845.)

Send for Circular of Great Value, giving full instructions for shipping

POULTRY, GAME, BUTTER, and PRODUCE.

No. 279 Washington St., N. Y.

Ref., *Irving National Bank*, New York City.

THE MONARCH OF ALL WINDMILLS.

The old reliable **STOVER,** that has stood the severest tests of **PRACTICAL USE** for years. It is a strong, durable, self-regulating, solid Wheel Mill, acknowledged by expert mechanics to be the **Best.** Awarded the **Centennial Diploma and Medal.** We make the only self-bracing derrick in use. We use the shortest shaft and thus the best balanced mill ever made. Warranted to stand as long as any other mill. Perfect in every part. O. E. Winger's Double-Acting, Novel and Improved $20 Feed Grinder. Can be attached to any wind mill. Will grind feed enough for twenty head of stock and household purposes. Send for illustrated circular. Inducements to Agents, who are wanted everywhere. Branch Factory at Kansas City, Mo.

STOVER WIND ENGINE CO.,

E. B. WINGER, Manager. **Freeport, Ill.**

We manufacture the old reliable **Stover** —the well tried, strong, durable, self-regulating, solid wheel **Wind Mill,** which took *the* Centennial Diploma, as well as a Medal. We refer to the **Official** Centennial Report. Also O. E. Winger's Improved $20.00 Feed Grinder, which is operated by Pumping Wind Mills—a novel and perfect Mill for grinding all kinds of grain for stock and house use, and Winger's Gravity Churns. Agents wanted everywhere. Send for catalogue to Branch Factory at Kansas City, Mo.

STOVER WIND ENGINE CO., Freeport, Ill.,

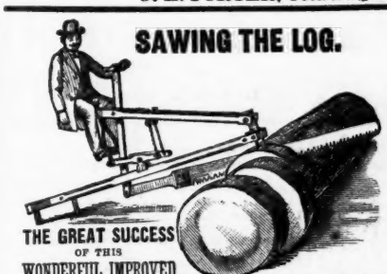
E. B. WINGER, General Manager. **U. S. A.**

Porter's Patent Wire Cable Derrick.

AT WORK IN THE FIELD, makes a perfect stack. Awarded first premiums at Illinois State Fair and St. Louis Exposition of 1879. My wood track carrier received same awards, No barn complete without one. Send for circulars to

J. E. PORTER, Ottawa, Ill.

SAWING THE LOG.



THE GREAT SUCCESS OF THIS **WONDERFUL IMPROVED** Labor Saving **RIDING SAW MACHINE** is fully demonstrated by the number in use and the present demand for them. It saws Logs of any size. **One man** can saw **more** logs or cord wood in one day and **easier** than two men can the old way. It will saw a two foot log in three minutes. **Every Farmer needs one.** Township agents wanted. Send for Illustrated Circular and Terms.

Address W. W. BOSTWICK & CO., 178 Elm St., Cincinnati, O.

EWALD OVER,

MANUFACTURER OF

VICTOR THREE AND FIVE HOED ONE-HORSE WHEAT DRILLS.
VICTOR ONE-HORSE RICE DRILL.
CARTER'S AUTOMATIC FARM GATE.
REGAN'S POWER CIDER PRESSES.
VICTOR DOUBLE "A" TRIPLE-HINGED HARROW.
HECTOR STONE CYLINDER FORCE PUMPS.
VICTOR HAND FIRE ENGINES.

Indianapolis, Indiana. Send for Circular.

THE BOSS CULTIVATOR.

Send to WM. PERRY & SON, Bridgeport, Conn., for Illustrated Circular.—**Practical, Cheap.**

BOARD FENCE

A R B

¼ mile $4.00, ½ mile $6.00; 1 mile $10; 2 miles $18. Barbs and driver Saves from being broken by stock.

H. W. Hill & Co., Decatur, Ills.

BONE MEAL FOR POULTRY.

30 lb. boxes	$1.40	100 lb. boxes	$3.00
60 lb. "	2.25	250 lb. bbls	5.50

GRANULATED BONE.

30 lb. boxes	$1.25	100 lb. bags	$2.75
60 lb. "	2.00	200 lb. bbls	5.00

CRUSHED OYSTER SHELLS.

50 lb. boxes	$ .75	200 lb. bags	$2.00
100 lb. "	1.40	350 lb. bbls	3.25

Expressly manufactured for fowls from superior stock. Pure and Sweet. Sent by freight on receipt of price. Samples 6 cents. FINE GROUND OYSTER SHELLS same price as crushed.

C. H. DEMPWOLF & CO.,

York Bone Mills, York, Pa.

THE GREAT AMERICAN TEA COMPANY

31 & 33 Vesey St.

P. O. Box 4235, NEW YORK.

Stores, Hotels, Restaurants, Club consumers will find to send Postal Card dress, and get the

Boarding Houses, Agents, and large it to their interest to the above ad- latest terms.

N. B.—Beware of imitators.

☞ NO HUMBUG.

North Star Seed Farms.

Minn. Early Amber Sugar Cane; St. Paul Tomato; Red River Sugar Corn, and other specialties of Minnesota growth and origin. A complete stock of northern grown Field and Garden Seeds. Catalogue now ready, free. Address

U. S. HOLLISTER, Sup't Seed & Nursery Dept's. T. M. METCALF, St. Paul, Minn.

11 PKTS. of Vegetable or Flower Seeds, per pkt. 25c. Sugar Beet (French Seed) 35c. per lb.; Red Onion, $1.95 per lb.; Prem. Flat Dutch Cabbage, $2.25; Long Orange Carrot, 50c., and other seeds at low rates. Send for price list. W. SUTTON, Seedsman, East New York, N. Y.

STRICTLY FIRST CLASS
SMALL FRUIT PLANTS,
SEEDS, and SEED POTATOES.

Catalogue free. Address F. M. HEXAMER, New-Castle, Westchester Co., N. Y.

Trees, Small Fruits, and Plants.

Peach, Apple, Pear, and other Fruit and Ornamental Trees, suitable to all sections. 30 varieties of Strawberries; 100,000 Crescent at $7.50 per thousand. Blackberries, Raspberries, Grapes, and other small fruits. Cuthbert and Queen Raspberry (young Pot Plants) at $20 per thousand. Peach and Apple Trees by mail, at $1 per dozen, prepaid. All common Green House and Vegetable Plants in their season. Prices low. Stock first class. All packed, free of charge, to carry safely. CHAS. BLACK & BRO.,
VILLAGE NURSERIES, Hightstown, N. J.

FORAGE PLANT.

Prickley Comfrey Roots. ½ lb., 50c.; 1 lb., 75c, post-paid; 10 lbs. and upwards by express, 50c. per lb. Full particulars sent. G. A. WILCOX, Gasport, N. Y.

SWEET POTATO. Seed from 40 acres, my own growing. All leading kinds. Best stock. Lowest prices. 2,500,000 plants in May and June. Write for circular. Special prices on big lots, and what you want.
W. W. RATHBONE, Sweet Potato Farm, Merietta, Ohio.

FIELD AND GARDEN SEEDS GROWN '79. Plants in their season. Grower's prices. Circular free. WM. W. STERLING, Cutchogue, L. I., N. Y.

June Budded Peach Trees by Mail.

One year Peach by express or freight. Apple Trees at bottom prices. R. S. JOHNSTON, Stockley, Del.

STRAWBERRY BERRY BOX AND CRATE IN THE WORLD
MANUFACTURED AT
THE MICHIGAN BASKET FACTORY OF
A.W. WELLS & CO.
ST. JOSEPH, MICH.
SEND FOR ILLUSTRATED PRICE LIST.
P. O. Box 1157.

C. COLBY & CO., Benton Harbor, Mich.
BERRY BOXES AND BASKETS.
Send for Illustrated Price List.

BERRY BOXES, PEACH BASKETS, best, cheap. Illustrated price list. Freights same as from Chicago. PACKAGE & BASKET CO., Muskegon, Mich.

The Maryland Farmer,

A Monthly Magazine devoted to Agriculture, Horticulture and Rural Economy. The oldest Agricultural Journal in Maryland. Terms $1.00 per year, in advance. Published by EZRA WHITMAN, 141 W. Pratt Street, Baltimore, Md. *The Maryland Farmer* has a larger circulation and will be read by more Farmers, Planters, Merchants, Mechanics, and others interested in Agriculture, than any other paper which circulates in the Middle or Southern States, and therefore is the best medium for advertisers who desire to extend their sales in this territory.

Fire Kindler.

The **SALAMANDER** Fire Kindler is one of the most useful inventions of the age for household use. Will kindle a fire **Quicker** and **Cheaper** than any other way. This is no catch-penny article, but is fully **WARRANTED,** and money refunded if not satisfactory. **DURABLE,** will last for years in daily use. Thousands already in use. Agents wanted. Write for Circulars, Testimonials, Terms, etc. Sample Kindler, post-paid, 75 cts. 1 or 3-cent stamps taken. Address J. C. EDDY, 122 Congress St., Troy, N. Y.

Victory and Honor at Home and Abroad to J. I. CASE & CO.'S Threshing Machinery. Manufactured at Racine, Wis.

APRON ECLIPSE VIBRATOR THRESHERS.
IMPROVED. PERFECTED. WARRANTED.
DO YOU WANT the BEST APRON Thresher? Buy our 1880 Eagle Machine.
DO YOU WANT the Popular Eclipse Thresher? It exclusively ours for 1880.
DO YOU WANT A VIBRATOR THRESHER? Our New 1880 VIBRATOR is Unequalled.
Annually make and sell more Threshing Machines than any firm in the world. Ask for Catalogue; costs nothing.

Can be applied to any implement, either with or without tongue.
NO. 2
Light, Strong and Simple.
Send for Price and Illustrated Circular.
M. E. Bunger & Co., Indianapolis, Ind. Makers.
A perfect Double Tree
A perfect Equalizer.
A perfect Stretcher.

RANK HIGHEST.
HORSE POWERS AND THRESHERS.
MANUFACTURED BY
MINARD HARDER, COBLESKILL, N.Y.

Stationary, Portable, and Self-Propelling STEAM ENGINES
FOR ALL PURPOSES.
Pony and Standard Saw Mills, Grist Mills, and Machinery.
A Complete Outfit for Saw and Grist Mills of any required capacity, by the old reliable Manufacturers and Contractors.
State what is wanted. COOPER MANUFACTURING CO., Circulars free. MT. VERNON, OHIO.

"A GREAT SUCCESS."
MOSELEY'S
CABINET CREAMERY.
MANUFACTURED BY
MOSELEY & STODDARD, Poultney, Vt.
SEND FOR CIRCULAR.

FINE WATCHES LOWER.
New Price List of American Waltham Watches, with description and prices of over 100 fine Gold or Silver Watches sent free to any address. It describes how I send Watches to all parts of the country to be fully examined before paying any money. Undoubted Reference given, perhaps in your own town.
N. H. WHITE, Jeweler, Newark, N. J.

PRACTICAL
TAXIDERMY,
AND
HOME DECORATION;
TOGETHER WITH
General Information for Sportsmen,
BY
JOSEPH H. BATTY,
TAXIDERMIST FOR THE HAYDEN EXPEDITION, AND OTHER GOVERNMENT SURVEYS, AND MANY OF THE LEADING COLLEGES AND MUSEUMS IN THE UNITED STATES. AUTHOR OF "HOW TO HUNT AND TRAP," ETC., ETC.
125 ILLUSTRATIONS.
PRICE, POST-PAID, $1.50.

JUST PUBLISHED.

What the Grocers Sell Us.

A Manual for Buyers.

Containing the Natural History and Process of Manufacture of all

Grocer's Goods.

Also their

Adulterations,

and how to detect them; rates of tare, as allowed by custom and law; tables of weights, measures, moneys, etc. The whole being designed as a guide to aid in the purchasing of goods.

By P. H. FELKER.

Revised and enlarged. PRICE, POST-PAID, $1.00.

Either of the above books sent post-paid on receipt of price by

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

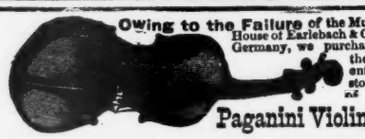
EGGS FOR HATCHING, LIGHT BRAHMAS. Also, Dark Brahmas, Buff, White, and Partridge Cochins, Houdans, White Leghorns, and Plymouth Rocks, carefully packed and warranted to go safely any distance. $3 per 13. Large Bronze Turkey Eggs, $5 per 13.
R. Y. FARNSERVICE, Kearny, Newark, N. J.

World's **ONLY** *Manufacturer of*
WHEEL CHAIRS

Exclusively.—ALL Styles and Sizes for
Invalids' and Cripples'
By use of hands only, in street or house. Comfort, durability, and ease of movement *unequalled.* Patentee and Maker of the "Rolling Chairs" pushed about at the Centennial. For Illustrated Catalogue send stamp and mention *American Agriculturist.*
HERBERT S. SMITH, 32 Platt St., New York.

WALTHAM WATCHES
At Lowest Prices.
HOWARD & CO.,
264 5th Avenue, New York.
Price Lists sent free.

Which reels up the cord and eye-glasses when not in use. By mail 25c. Circulars free. J. S. BIRCH & CO., 38 Dey St., N. Y.



Owing to the Failure of the Musin House of Earlebach & Co. Germany, we purchased their entire stock of
Paganini Violins.

Celebrated for fine tone and finish. Italian strings, ebony pegs, inlaid pearl tail-piece, fine long bow with ivory and silvered frog, in violin box. Book of Instruction, with 558 pieces choice music, including all the music from *Pinafore.* By express for $8.50. Instruments of this quality are often sold as high as $10. Satisfaction guaranteed, or money refunded. This chance to get a fine instrument for so small a sum is seldom offered. Do not delay; order at once, and secure a great bargain. Address G. H. W. BATES & CO.,
Importers, Boston, Mass.

I Arise TO SAY

"The only objection to your **'Common Sense Rocker'** is, we all want it. It suits all sizes, from the two-year-old baby to the champion member of the Fat Men's Club."
Every chair made upon honor and warranted perfect. Prices range from 75 cts. to $11 each. Send for Catalogue.
Manufactured by
F. A. SINCLAIR, Mottville, N. Y.

THE RACINE IRON WORKS
Manufacture FLORISTS' and ORNAMENTAL IRON GOODS

Ferneries, or Wardian Cases, Aquaria, Fountains, Vases, Brackets, Plant Window Boxes, Flower Stands, Chandeliers, etc.

S. FREEMAN & SON,
Proprietors,
Racine, Wis.

☞ Send for our Illustrated Catalogues.